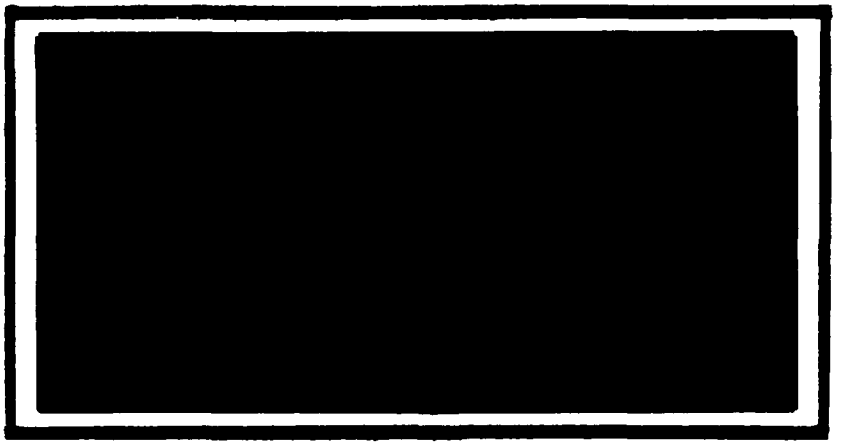


DEPARTMENT OF THE AIR FORCE

AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

(2)

AFIT/GSM/LSR/89S-21

THE IMPACT OF A NONSMOKING POLICY ON A USAF MEDICAL CENTER

THESIS

Mark E. Kain
Major, USAF

AFIT/GSM/LSR/89S-21

The contents of the document are technically accurate, and no sensitive items, detrimental ideas, or deleterious information is contained therein. Furthermore, the views expressed in the document are those of the author and do not necessarily reflect the views of the School of Systems and Logistics, the Air University, the United States Air Force, or the Department of Defense.

AFIT/GSM/LSR/89S-21

THE IMPACT OF A NONSMOKING POLICY ON A USAF MEDICAL CENTER

THESIS

Presented to the Faculty of the School of Systems And Logistics of the Air Force Institute of Technology Air University In Partial Fulfillment of the Requirements for the Degree of Master of Science in Systems Management

Mark E. Kain, B.S.
Major, USAF

September 1989

Preface

The purpose of this study was to determine the impact on an Air Force organization when the commander implements a strict non-smoking policy. It is hoped that this study will show Air Force organization commanders some of the possible effects of implementing provisions of Air Force Regulation 30-27.

An employee survey was administered approximately six months after a strict non-smoking policy went into effect at a USAF Medical Center. This study analyzes the results of that survey and compares these results with those of prior studies.

This study would not have been possible without the help of others. I would like to thank my thesis advisor, Lt Col John Ballard for providing me with the opportunity to participate in this study and providing the necessary guidance and encouragement. I am also greatly indebted to Maj (Dr.) Kenneth Olive who acted as an enthusiastic point of contact at the Medical Center and interested contributor to the study. The employees and staff of the Medical Center deserve my deepest thanks for participating in these surveys. Last but not least I am forever indebted to my wife, Debbie, who is probably the fastest and most reliable envelope stuffer in the world.

Mark E. Kain

Table of Contents

List of Tables

Abstract

This study investigated the results of the implementation of a strict nonsmoking policy at a USAF medical center. Areas of interest included changes in smoking behavior, attitudes toward the policy, and organizational behavior after policy implementation. A literature search revealed only five similar previous studies, none of which were conducted in a military organization.

A survey was administered six months after policy implementation to the entire staff of 1613 employees. 934 were returned for a response rate of 57.9%.

Smoking prevalence did not change significantly. The number of cigarettes reported smoked at work decreased by an average of 1.9 per workday. There were no indications of compensatory smoking off the job. Smokers differed significantly with nonsmokers in their amount of support for the policy. Using a constructed scale of response items, only 31% of the smokers approved of the policy while 89% of the nonsmokers approved.

Organizational behavior areas examined included commitment, job satisfaction, smoker networking, break patterns, and perceptions of productivity decrease. The average daily time loss per smoker per day due to smoking breaks was

calculated to be 49.5 minutes. Over 70% of the respondents reported a perceived decrease in productivity as a result of the policy.

THE IMPACT OF A NONSMOKING POLICY ON A USAF MEDICAL CENTER

I. Introduction

General Issue

The American society has experienced a changing attitude toward smoking in the recent past. This change is linked to increasing evidence of the health risks of smoking. Of recent interest is the evidence about the hazards of "second hand smoke." This new evidence indicates that even nonsmokers have reason to be concerned about cigarette smoke in their environment. These concerns about smoking and its effects for the smoker and nonsmoker are magnified by the increasing health consciousness in this country.

One potential outcome of this heightened smoking awareness is interpersonal conflict between smokers and nonsmokers. In the past smokers have enjoyed the privilege of smoking in areas shared with nonsmokers with few restrictions. Now, smokers face increasing restrictions on where they may engage in what is considered a perfectly legal act. Although many smokers are in fact sympathetic to the needs and desires of nonsmokers, some may feel these new restrictions are unjustified. These feelings could easily result in interpersonal conflict in the work environment where such conflict might be counterproductive.

This conflict presents a situation that managers increasingly cannot ignore. Managers traditionally have had a responsibility to provide a healthy working environment for employees. Air Force Regulation 30-27, Smoking In Air Force Facilities (Appendix A), states "commanders will resolve conflicts, due to the provisions of this regulation, in favor of the nonsmoker" (Downey, 1988, p.1). This is one example of many where managerial response to the conflict has been a written policy regarding smoking in the workplace.

A case could be made that hospitals should be on the forefront of this movement. If hospitals consider their mission to be the betterment of health for society, then it would contribute to that mission to propagate policies which might curb a practice which has been labeled as "the largest single preventable cause of premature death and disability in the United States" (DHHS, 1986, p.vii). Professional medical organizations (e.g., the American Medical Association, the American College of Physicians, and the American Academy of Pediatrics) support smoking restrictions in hospitals (DHHS, 1986). Such restrictions set the example for the public, and they eliminate the effects of involuntary smoking on patients.

On July 1, 1988, the management of a USAF Medical Center implemented a strict nonsmoking policy. The policy restricted smoking to outdoors and one indoor facility which

is attached to the main building. This policy impacted Air Force members, civilian employees, and volunteers working at the medical center, as well as patients.

Specific Problem

Few studies of a smoking policy to examine organizational impact have been conducted after implementation. A literature search found only five (Andrews, 1983; Biener, Abrams, Follick, and Dean, 1989b; Petersen, Helgerson, Gibbons, Calhoun, Ciacco, and Pitchford, 1988; Rigotti, Pikl, Cleary, Singer, and Mulley, 1986; Rosenstock, 1986), none of which involved a military organization. More research is needed. Of specific interest are the attitudinal and behavioral impacts of a restrictive smoking policy on employees.

This study will examine attitudes and self-reported behaviors associated with a restrictive smoking policy at one Air Force Medical Center. Specifically, the study will examine the impact of the policy with respect to smoking behavior, attitudes toward the policy, and organizational behavior. The study will examine reporting differences between smokers and nonsmokers, supervisors and non-supervisory personnel, those frequently involved with patients versus those with other duties, and other dichotomous groups.

Limitations

This research effort was limited to a single USAF Medical Center. No data was gathered prior to policy implementation. The study was not initiated until after the policy was implemented. Several recall questions were asked in the survey instrument in an attempt to establish baseline data.

II. Literature Review

Introduction

The purpose of this literature review is to summarize literature related to smoking in the workplace. The information can be divided into various sections. This chapter begins by taking a short look at the studies relating to the hazards of environmental tobacco smoke (ETS). It then reviews current trends in public sentiment toward smoking, and covers some of the resulting government and Department of Defense actions. From there, it moves to policies in the work place, and associated legal ramifications. Finally, the effects of smoking policies in the workplace, especially hospitals, are reviewed.

For this study, the following definitions apply:

Involuntary smoking: inhaling cigarette smoke as a result of being in the vicinity of it without actually being actively engaged in smoking.

Mainstream cigarette smoke: "the smoke drawn through the tobacco into the smoker's mouth" (DHHS, 1986, p.7).

Sidestream smoke: "the smoke emitted by the burning tobacco between puffs" (DHHS, 1986, p.7).

Environmental tobacco smoke (ETS): "smoke [which] results from the combination of sidestream smoke and the fraction of exhaled mainstream smoke not retained by the smoker" (DHHS, 1986, p.7). Also: "second hand smoke."

Smoking Policy: an officially mandated or directed policy from the management of an organization restricting smoking in any way.

Smoker: a person who regularly smokes cigarettes, pipes, or cigars.

Nonsmoker: a person who does not and has never smoked at all.

Ex-smoker: a previous smoker who no longer smokes at all.

Compensatory smoking: increased smoking away from the work site to offset a decrease in smoking at the work site as a result of a smoking policy (DHHS, 1986).

ETS Related Studies

Much literature exists related to the health hazards of environmental tobacco smoke. The most extensive review of the literature is found in the 1986 Surgeon General's report, The Health Consequences Of Involuntary Smoking (DHHS, 1986). The authors of this report come to the following conclusions:

1. Involuntary smoking is a cause of disease, including lung cancer, in healthy nonsmokers.

2. The children of parents who smoke compared with the children of nonsmoking parents have an increased frequency of respiratory infections, increased respiratory symptoms, and slightly smaller rates of increase in lung function as the lung matures.

3. The simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, the exposure of nonsmokers to environmental smoke (DHHS, 1986, p.7).

Similar conclusions are cited from other studies and antismoking experts. Steven D. Stellman, assistant vice president of epidemiology with the American Cancer Society, speculates the risk for cancer in nonsmokers routinely

exposed to ETS is between 1.3 to 3.5 times the risk of unexposed nonsmokers (BNA, 1986).

Skeptics of the studies conducted thus far look at the evidence differently. The most comprehensive collection of these viewpoints was found in Clearing The Air: Perspectives On Environmental Tobacco Smoke (Tollison, 1988), funded by the Tobacco Institute. This collection of works examines the social and legal issues, the flaws of studies to date, and cites 25 pages of excerpts from studies which support the case that the health risks of ETS are negligible, or at least inconclusive. Many of its references are the same as those in the Surgeon General's report. The work points out that two major studies (one by the Surgeon General) "concluded that ETS has not been shown scientifically to increase the risk of cancers in tissues other than the lung or to increase cardiovascular disorders or deficits in respiratory function in adults..." (Reasor, 1988, p.11-12).

The most often cited flaw of existing studies is the lack of measures of smoke exposures (BNA, 1986; Tollison, 1988). Another criticism is the failure to address "building-related illnesses" (Robertson, 1988, p.23-37). Building-related illnesses refer to ventilation and filtration problems with modern air conditioning systems (Robertson, 1988). Robertson (1988) suggests poor indoor air quality as a result of "building-related illnesses" is the real problem and that smoking is just a symptom of the problem.

Changing Public Sentiment

The warnings that smoking is dangerous have been quite numerous. The first U.S. Surgeon General report on the health hazards of smoking was published in 1964 (Crocker, 1987, p.739). Since that era, smoking in the United States has gone from being quite fashionable to very unfashionable. While thirty years ago 38% of American adults smoked, it is now only 26% (Gibbs, 1988). Some claim that the Surgeon General's 1986 report related to involuntary smoking helped spark current anti-smoking activity (Crocker, 1987; Gibbs, 1988; Goode, 1988). However, this might have simply been needed ammunition for closet anti-smoking activists to come out into the open. Regardless of which is the case, public opinion has apparently shifted.

Surveys indicate this shift in public attitude toward smoking. A 1985 Gallup Poll indicated that 80% of nonsmokers and 76% of smokers desired employers to establish specified smoking areas (Crocker, 1987). A 1987 readers survey by the business periodical, Venture, investigated the issue of smoker courtesy. Nearly 80% of the 1,548 respondents, and over half of the smokers said that depending on smokers' courtesy was inadequate protection from ETS (Williams, 1988).

One survey response was so overwhelming, it caused a major shift in company policy, a new advertisement campaign, and the subsequent firing of an advertising agency by the

subsidiaries of R.J. Reynolds tobacco company (Gibbs, 1988; Konrad and Foust, 1988). A Northwest Airlines survey determined that 90% of its regular customers preferred seats in the no smoking section (Gibbs, 1988). As a result, on 23 April, 1988, Northwest eliminated smoking on all its domestic flights (Konrad and Foust, 1988). When the vice-chairman of R.J. Reynolds saw a Northwest television commercial touting the plan and he realized that the advertising agency involved, Saatchi & Saatchi DFS, was also the agency for several R. J. Reynolds subsidiaries, he ordered the agency fired (Konrad and Foust, 1988).

Obviously, the potential for conflict in this situation is immense. Smokers, the tobacco industry, and civil libertarians will not sit by quietly and watch changes occur without being heard. The conflicts range from massive court battles to subtle hints. "Signs on office walls that used to smile THANK YOU FOR NOT SMOKING now growl IF YOU SMOKE, DON'T EXHALE" (Gibbs, 1988, p.65). The battle grounds are diverse including family homes, the work place, bars, and restaurants. Restaurants are a particularly sensitive spot as "some people can no more dine out without smoking than eat without chewing" (Gibbs, 1988, p.67). One Texan smoker, Kay Cohlmia, heads the Great American Smokers Club (Baker, Cohen, Fragin, and Springen, 1988). "'This is a civil-rights movement,' says Cohlmia, whose club offers members dog tags inscribed 'Since the government's treating you like

a dog, you might as well look like one'" (Baker et al., 1988, p.25).

Government Action

Public sentiment has prompted government action in some instances. Legislation restricting cigarette smoking is not new. Around 1900 some states banned cigarettes entirely, but the bans were short lived and by 1927 they were all repealed (Lacayo, 1988). The literature did not indicate that any person or group was trying to duplicate such restrictive legislation.

Policies or regulations restricting smoking have been established in various federal organizations including the General Services Administration (GSA), Veteran's Administration, Postal Service, Department of Defense (DoD), and the Federal Aviation Administration (FAA) (Crocker, 1987; "No Smoking", 1988; SPOHP, 1986). A recent FAA regulation is notably restrictive. As of April 30, 1988, passengers on domestic flights of two hours or less were not allowed to smoke throughout the flight ("No Smoking," 1988). Flights of two hours or less comprise approximately 80% of domestic flights ("No Smoking," 1988).

States and municipalities have enacted the majority of antismoking restrictions. Approximately 40 states and 200 to 300 municipalities have some type of laws restricting smoking (Baker et al., 1988; Gibbs, 1988; Williams, 1988). Minnesota passed the first "Clean Indoor Air Act" in 1975

(Baker et al., 1988). Maine limits locations for cigarette-vending machines to places where teenagers will not have easy access and Utah prohibits cigarette billboard advertisements (Gibbs, 1988). The most cited and controversial law is that of New York City. It may be the toughest in the nation. One provision of the law fines the business failing to enforce the rules, not the smoker (Baker et al., 1988). A first offense results in a $100 fine with subsequent fines from $200 to $500 (Baker et al., 1988). The New York law requires half the tables in restaurants seating over 50 be in a nonsmoking section (Gibbs, 1988). The city of Beverly Hills attempted to outlaw smoking in eating establishments, but with restaurant owners complaining of 30% decreases in business, the city council changed the law allowing for smoking sections with special ventilation requirements (Gibbs, 1988).

Department of Defense Action And Related Studies

DoD Policies. The first DoD policy concerning smoking in the workplace was enacted in 1977 (SPOHP, 1986). It contained a specific ventilation requirement for offices shared by smokers and non-smokers (SPOHP, 1986). Overall, the purpose of the 1977 policy appears to have been a set of guidelines, and not directive in nature.

On 11 March 1986, the Secretary of Defense issued DoD Directive 1010.10 (Downey, 1988; SPOHP, 1986). It is the current DoD policy. This directive implements an all out

campaign against smoking in the DoD. It provides specific requirements to:

> create a social environment that supports abstinence and discourages use of tobacco products, to create a healthy working environment, and to provide smokers with encouragement and professional assistance in quitting. (Downey, 1988, p.1)

These requirements have forced DoD organizations to reevaluate and modify their regulations pertaining to smoking in the workplace.

A major dilemma faced by the DoD is the issue of reduced prices for tobacco products in military exchanges and commissaries. At odds are the health promotion advocates and the forces concerned with the degradation of military benefits. Repeated legislative attempts to increase the current prices or ban the products from military shelves have had limited success, but it appears the attempts will continue (Schill, 1988).

Air Force Policy. Air Force Regulation 30-27, Smoking In Air Force Facilities (Appendix A), implements DoD Directive 1010.10. Provisions of the regulation indicate its seriousness. The regulation starts by advising that "major commands may adopt more restrictive supplements" (Downey, 1988, p.1). In addition, the regulation establishes non-smoking as the "organizational norm," as well as making unit and base commanders specifically responsible for implementation as well as conflict resolution (Downey, 1988, p.1). It further specifies "commanders will resolve conflicts, due to

the provisions of this regulation, in favor of the nonsmoker" (Downey, 1988, p.1).

At least one major command, Air Training Command (ATC) has adopted a more restrictive supplement to the regulation. While the Air Force regulation allows for smoking in some designated areas within buildings, the ATC supplement virtually restricts smoking to outside (Adams, 1988).

Besides a more restrictive regulation, the Air Force has also mounted an extensive anti-smoking campaign with a goal of 10% reductions in the number of smokers each year (Datko, 1988). Education programs related to smoking hazards have been introduced during initial training as well as continuing training programs for all Air Force personnel (Datko, 1988). A major survey effort is being conducted to determine the effectiveness of this campaign, the most recent of which was in 1988. The 1988 survey measured a multitude of tobacco related items including campaign awareness, smoking policy prevalence, smoking prevalence for both members and spouses, cessation attempts, desirability of cessation classes, and purchasing habits (Datko, 1988). The extent of the campaign is evident by the increase in members reporting knowledge of the campaign. The percentage increased from 29% in 1986 to 83% in 1988 (Datko, 1988). The percentage of members reporting they worked under a workplace smoking policy increased from 51% to 91% over the same period.

Smoking Prevalence In The DoD. One reason for the concern over smoking in the military is the higher incidence of smoking in the military compared to the civilian population. While both civilian and military surveys indicate decreased use, the military rates still far exceed the civilian. Smoking prevalence in the Air Force, however, is much closer to the civilian rate than is the DoD rate. A depiction of the percentages (by year) of the civilian, DoD, and Air Force populations which smoke is presented in Table 1. The difference between DoD and civilian smoking prevalence is apparent.

TABLE 1

Percentages of the Civilian, DoD, And Air Force Populations Which Smoke By Year

Population	1958	1967	1980	1982	1985	1986	1988
Civilian	38[a]	42[b]	--	--	30[c]	27[c]	26[a]
DoD	--	--	51[d]	51[e]	46[e]	--	41[d]
Air Force	--	--	--	--	39[f]	31[f]	28[f]

([a]Gibbs, 1988; [b]Hamilton, 1987; [c]Baker et al., 1988; [d]"DoD," 1989; [e]Marsden, Bray, and Herbold 1988; [f]Datko, 1988)

Smoking Prevalence In The Air Force. Overall thus far, the Air Force has been able to meet its goal of 10% reductions in the number of smokers per year (Datko, 1988). Surveys indicate a 20.5% reduction from 1985 to 1986 and a 10.5% reduction from 1986 to 1988 (Datko, 1988). It is important to note that the goal is a 10% annual reduction in

the number of smokers, not in the percentage of smokers in the Air Force. As shown in Table 1, these reductions are not of a 10% magnitude. A disturbing trend is indicated by the results of the 1988 survey which may indicate the Air Force is down to its hard core smokers. While the 1985 to 1986 period indicated significant reductions of smokers in all ranks, the 1986 to 1988 period showed a marked reduction in progress in the ranks of senior airmen through technical sergeant (Datko, 1988). Members in these ranks comprise 49% of the force (Datko, 1988). The percentage of all enlisted members (airmen and noncommissioned officers) who smoke only fell from 34% to 32% over the 1986-1988 time period (Datko, 1988). One estimate of the percentage of blue collar workers who smoke is as high as 50% (Gibbs, 1988).

Service Related Literature On Smoking. While all of the services are concerned with smoking prevalence, the literature reflects other specific research topics related to smoking.

Efforts by the Navy revolve around determining if they recruit a higher number of smokers than the civilian norm, or if their personnel start smoking after entry into the Navy. Additionally, efforts have been made to determine the effects of smoking on fitness and the effects of smoking education on Navy recruits. This research effort is spearheaded by Terry A. Cronan at the Naval Health Research Center and includes several studies (Conway and Cronan,

1986; Cronan, Conway, and Kaszas, 1988; Cronan, Hervig, and Conway, 1987). The conclusion of Cronan and colleagues is that in fact, the Navy recruits a proportion of smokers similar to the civilian population, but a large number of them start smoking after they enter the Navy (Cronan et al., 1988). Using results of the Navy physical fitness test, as might be expected, Conway and Cronan (1986) conclude that Navy smokers are less fit, especially with regard to cardiovascular fitness. Cronan also concludes that smoking intervention education during basic training helps prevent recruits who have never smoked from starting, but has no effect on the rate of ex-smokers who start smoking again (Cronan et al., 1987). One earlier Navy study attempted to determine differing traits of smokers and non-smokers (Burr, 1983).

Air Force literature targets general health practices (including smoking) of military and civilian members (Allen, 1987; Hyde, 1986; Vogel, 1986). The Vogel (1986) study was conducted at the Air Force Logistics Command Headquarters (AFLC HQ) at Wright-Patterson AFB, Ohio while the Allen (1987) study at the Ogden Air Logistics Center (Ogden ALC), Hill AFB, Utah. Allen (1987) reported that military smoking rates within the AFLC HQ were higher than civilian (this would correlate with national figures), while Vogel (1986) indicated the opposite. This difference may have simply indicated regional or population age differences. Hyde

(1986) examined trends of Air Force captains at WPAFB, and concluded that smoking was decreasing in prevalence. One additional study described a proposed method to measure Air Force recruit smoking rates similar to the Navy efforts, but unfortunately, did not include any data gathering or subsequent data analysis (Fisher, 1985). The 1988 Air Force survey did, however, indicate that approximately 25% of the smokers in the Air Force started after they had entered the service (Datko, 1988).

One study by the Army had a particularly different direction. In an extensive literature review, Dyer (1986) examined the impact of smoking on the effectiveness of individuals involved in Army operations on the ground. The review addressed topics varying from position disclosure due to the glow of a cigarette, to the physical and mental impact on soldier performance as a result of smoking (Dyer, 1986).

Actions In The Private Sector

Some private businesses, realizing this change in employee attitude toward smoking in the work place, have initiated smoking policies. Some do not even hire smokers. These include Turner Broadcasting, Northern Life Insurance in Seattle, and U.S. Gypsum (Crocker, 1987; Gibbs, 1988). For the most part, however, it is only smaller companies that have such policies (Swart, 1988; Williams, 1988).

A particularly extensive survey on corporate smoking policies is described by Swart (1988). He describes six different corporate smoking policies on a continuum from most to least restrictive (Swart, 1988). His survey revealed that the most prevalent (39%) policy type was:

> Smoking is prohibited in all areas in company buildings, with few exceptions. Smoking is permitted in the smoking section of the cafeteria (or room with a similar function in your company, if there is no cafeteria); and in private offices, which may be designated "smoking permitted" or "no smoking" by the occupant. (Swart, 1988, p.62)

His survey suggested that in the future, more companies would adopt policies, and strict policies would occur more often than today (Swart, 1988).

Company motivation for enactment of smoking policies varies. Reasons include employee complaints, concern about employee health, state and local laws, or simply management's dislike for smoke (Swart, 1988; Williams, 1988). The previously mentioned Venture survey (Williams, 1988) differed with the Personnel survey (Swart, 1988) regarding the most frequent motive. The Personnel survey concluded employee complaints were the top motivation, while in the Venture survey, personal dislike for smoke by management was the most likely inducement (Swart, 1988; Williams, 1988).

Legal Ramifications

The literature cited several major types of legal problems associated with smoking. One type was effort to overturn legislation and restrictions, while another was

litigation against the tobacco companies (Crocker, 1987; Koepp, 1988; Lacayo, 1988). Probably most important to managers is the potential for legal conflict between employees and employers. This includes situations where the employer does not have a policy for smoking in the work place, and nonsmokers want one, or instances where the employer attempts to implement a policy against the wishes of employees (Crocker, 1987; Lacayo, 1988).

Much confusion exists concerning legal guidance or precedent related to the establishment of policies governing smoking in the work place. Crocker (1987) covers the topic extensively. Citing Federal Employees for Non-Smokers' Rights v. United States, she concludes that OSHA (Occupational Safety and Health Administration) takes virtually no stance on the issue (Crocker, 1987). On the other hand, citing Shimp v. New Jersey Bell, she determines that the fact that OSHA gives no guidance does not preclude states from establishing some (Crocker, 1987). Crocker goes on to describe cases where nonsmokers have both done well and not so well in legal action (Crocker, 1987). She concludes:

> Does an employer have a right or a responsibility to attempt to monitor an employee's personal life to prohibit the employee from smoking? Can an employer legally discriminate against smokers in selecting employees or deciding to continue the employment relationship? (Crocker, 1987, p.745)

The first, she answers no, and the second, a qualifying maybe (Crocker, 1987). The first answer she bases on indi-

vidual privacy and the second based on the fact that smokers are not a group specifically identified for protection by discrimination laws (Crocker, 1987). Although not yet tested, other discrimination aspects could become legal issues given the demographics of smokers and nonsmokers (Crocker, 1987; Gibbs, 1988; Lacayo, 1988).

Impact Of Smoking Policies

The literature search revealed five documented studies related to postimplementation of smoking policies. Two were controlled studies with data gathering at "baseline" (prior to implementation), one was uncontrolled with data gathering at baseline, and two were uncontrolled with no baseline data gathered (other than recall information) (Andrews, 1983; Biener et al., 1989b; DHHS, 1986; Petersen et al., 1988; Rigotti et al., 1986; Rosenstock, 1986). All were studies of health maintenance organizations except Petersen et al. (1988) which was of an insurance company. Only an abstract of preliminary information was available on the Rigotti et al. (1986) study. Contact with the author revealed that further work on that research effort had not been accomplished. No literature was found involving a military study, although mention was made of a smoking ban at the Madigan Army Medical Center, Tacoma WA. (SPOHP, 1986).

The authors of the 1986 Surgeon General's report included an extensive review of all of the aforementioned studies except Petersen et al. (1988) (DHHS, 1986). They

suggested that postimplementation studies should include research in air quality, approval/support, smoking behavior, attitudes (about smoking) and social norms, and policy enforcement/compliance (DHHS, 1986). The authors conclude that not enough research has been done in this area (DHHS, 1986).

They cautioned about conclusions from limited studies:

> Uncontrolled one-time assessments done before or after policy adoption do not permit conclusions about the policy effects, although they may provide hypotheses for further work. Postimplementation surveys of a population can, however, provide useful information about the degree of policy approval, awareness, compliance, and enforcement. (DHHS, 1986)

The report was cautious about conclusions on smoking prevalence in the Andrews study which noted drastic reductions in smokers (Andrews, 1983; DHHS, 1986). This apparent reduction may have been due more to sampling differences with pre and post implementation surveys than actual reductions in the numbers of smokers (DHHS, 1986).

Methodological problems considered, the following conclusions were reached regarding postimplementation:

> Smoking policies may have multiple effects. In addition to reducing environmental tobacco smoke exposure, they may alter smoking behavior and public attitudes about tobacco use. Over time, this may contribute to a reduction of smoking in the United States. To the present, there has been relatively little systematic evaluation of policies restricting smoking in public places or at the workplace.

> On the basis of case reports and a small number of systematic studies, it appears that workplace smoking policies improve air quality, are met with good compliance, and are well accepted by both smokers and nonsmokers. Policies appear to be followed by a decrease in smokers' cigarette consumption at work and an increase in enrollment in company-sponsored smoking cessation programs. (DHHS, 1986, p.324)

The authors offered several explanations for the unexpectedly favorable support for policies by smokers including the assurance of smoking rights by having a written policy, the anticipated help a policy could provide for cessation attempts, and health concerns (DHHS, 1986). They also determined there is no evidence that policies will decrease smoking prevalence or increase cessation attempts (DHHS, 1986).

Studies to date indicate widespread approval of smoking policies after implementation for smokers as well as nonsmokers. Although the various studies sampled respondents at varying time intervals after policy implementation, a comparison of approval rates seems fairly consistent (see Table 2). The one exception is the Rosenstock study. The lower support rate among smokers in this study seems to stem from poor communication and implementation of the policy (Rosenstock, 1986). Petersen et al. (1988) did not ask any survey questions directly related to policy approval or support. Although no literature specifically examined a military organization's reaction to a particular policy, the

TABLE 2

Policy Approval/Support Rates By Study

Study	Percent Smokers	Percent Ex And Nonsmokers	Percent Overall
Andrews (1983)	83	93	88[a]
Biener et al. (1989b)	69	89	87[a]
Petersen et al. (1988)	--	--	--
Rigotti et al. (1986)	--	--	86
Rosenstock (1986)	36	93[a]	85

[a]Estimate by this author based on data reported.
Note: Figures are expressed as percentages of respondents by group. No data was available for Petersen et al. (1988) and part of Rigotti et al. (1986).

previously mentioned USAF surveys indicated a large decrease in the number of personnel definitely desiring increased smoking restrictions. From 1986 to 1988 the percentage fell from 58% to 19% (Datko, 1988). Over the same period, the percentage agreeing with the provisions of the current Air Force regulation on smoking rose slightly from 61% to 64% (Datko, 1988).

Following implementation of a restrictive smoking policy, cigarette consumption at work might be expected to decrease, hopefully with no compensatory increased smoking during breaks or at home. The available data indicate that indeed decreased smoking at work may occur (see Table 3). These numbers must be evaluated with caution however, as in at least one study, the control group also had decreases

indicating that the policy may not have been the only cause (Biener et al., 1989b). While Andrews (1983) did not indicate specific consumption numbers, 33 percent of the smokers indicated they were smoking less 20 months after policy implementation.

TABLE 3

Cigarette Consumption Rates At Work By Study

Study	Baseline	1Mo	3Mo	4Mo	6Mo	12Mo
Biener et al. (1989b)	8.4	4.5	--	--	3.5	4.5
Petersen et al. (1988)	19.8[a]	--	13.4[a]	--	--	--
Rigotti et al. (1986)	5.0	--	--	--	--	2.7
Rosenstock (1986)	17.6	--	--	15.6	--	--

[a]Estimate by this author based on number of packs x 20 cigarettes per pack.
Note: Figures indicate cigarettes consumed per workday.

Studies thus far are inconclusive about whether or not compensatory smoking occurs (Biener et al., 1989b; DHHS, 1986; Rigotti et al., 1986; Rosenstock, 1986). While Rigotti et al. (1986) reported decreased consumption at work, the researchers concluded no significant change in total daily consumption which would indicate some compensatory smoking. Of interest however, was the slight increase in total daily consumption changing from 13.5 to 14.6 cigarettes (Rigotti et al., 1986). These numbers not only indicate that compensatory smoking may have occurred, but that for some reason, smoking increased slightly above what might be expected for

mere compensation. Biener et al. (1989b) reported a disturbing trend at the twelve month point indicating that smokers may have started compensating for the inconvenience by finding ways to increase their smoking at work. Rosenstock (1986) indicated no evidence of compensatory smoking.

While some might speculate there would be a drastic decrease in smoking prevalence, only the Andrews study indicated such as a result of policy implementation and it probably should be interpreted with caution due to the previously mentioned flaws (Andrews, 1983; DHHS, 1986). All other studies indicated only minor changes in smoking prevalence (Biener et al., 1989b; Petersen et al., 1988; Rigotti et al., 1986; Rosenstock, 1986). Conclusions were also inconsistent on a policy's impact on the prevalence of quitting attempts.

Conclusion

The major shift in public attitude toward smoking, especially in public and in the work place, is a phenomenon that will affect both Air Force and civilian managers now and in the near future. Managers will have to determine if changes are necessary in their work place, and if so, the best way to implement them. This chapter began by reviewing some of the studies related to environmental tobacco smoke. It continued with a description of the magnitude of the change in public attitude toward smoking, and the resulting forms of legislation and regulation. It then reviewed

current DoD and corporate policies related to smoking, and some of the legal implications that managers might consider. Finally, the effects of implementing a smoking policy were discussed. With a review of current literature related to this topic complete, the next chapter describes the method used in conducting this research effort.

III. Method

Background

The medical center management was primarily interested in change as a result of the policy. Their primary interests were in changes in smoking behavior as well as attitudes toward the policy. Investigation of organizational behavior was added to the study to make it a more complete evaluation of the policy's impact. Additionally, this area had apparently not been evaluated in previous studies.

The ideal research effort would have included data collection both prior to (baseline) and after implementation of the policy. Unfortunately, no data collection was accomplished prior to the policy implementation (1 July 1988), and so in that respect the research is limited. No early data collection was accomplished because the research effort was not conceived until after the policy became effective.

The Survey Instrument

Survey response was completely optional. Survey responses were completely anonymous and no attempts were made to identify respondents or nonrespondents. Survey responses were made on a standardized computer form, AFIT Form 11C, to facilitate scoring by computer.

Survey Questions. Emory states "survey instruments normally include three types of information:" administrative, classification/analysis, and sought data (Emory, 1985,

p.207). The administrative information for this survey instrument (Appendix B) is included in the cover letter signed by the medical center commander. It identifies and endorses the nature of the research and the researchers. The letter also promises dissemination of results and identifies a specific point of contact for respondents with questions. This promised dissemination of information was accomplished with an article in the base newspaper describing initial results. In addition, initial results were briefed to the medical center staff and made available for interested employees. Following the cover letter is a cover page, followed by a page with brief instructions. The survey consists of 59 questions.

The classification and analysis questions make up the first section of the survey labeled Part I: Demographic Information. This section simply attempts to classify respondents according to various groups of interest within the medical center.

Part II, Attitudinal Information makes up the majority of the questions of interest applicable to all respondents. Responses are based on a seven point Likert scale, with responses ranging from strongly disagree to strongly agree. The sequence of questions attempts to go from simpler to more thought provoking. Some questions are asked in different forms more than once to aid in reliability verification. Two questions, numbers 18 and 43 are related to Part I

(Demographic Information), but were felt to be better answered with a scaled response. While a few of the questions are exploratory in nature, most are directly related to the investigative questions from chapter one. Variables isolated in this section include attitudes toward: smoking in general, second hand smoke, policy adherence and enforcement, job satisfaction, and effectiveness on the job.

Parts III and IV are multiple choice questions to determine smoking habits of smokers and ex-smokers respectively. These questions address cigarette consumption and the policy's effect on consumption. An attempt is also made to determine cigarette consumption of the respondent prior to the policy implementation. Results of these recall questions should be interpreted with caution as research indicates the poor ability of respondents' recall (Emory, 1985). In addition to consumption, smoking break patterns are addressed as well as attempts to quit.

Part V of the survey is a comment sheet for any miscellaneous comments.

Survey Validity. The survey was designed primarily by Lieutenant Colonel John Ballard, Ph. D., Assistant Professor of Management and Organizational Science at the Air Force Institute of Technology's School of Systems and Logistics. Colonel Ballard is a recognized consultant on survey design and administration and former director of the Air Force's survey program. Contributions to survey design were also

received from Major Ken Olive, M. D., an internal medicine physician as well as this author. No questions from previously administered surveys were used exactly as worded, but survey design relied heavily on surveys and survey response summaries from the literature (Andrews, 1983; Becker, Myers, Sacci, Weida, Swank, Levine, and Pearson, 1986; Biener et al., 1989b; Lahey, undated; New England, undated; Petersen et al., 1988; Questionnaire, undated; Rigotti et al., 1986; Rosenstock, 1986).

In a small pretest, five survey drafts were administered to various medical center employees to verify understandability of the instrument. The five were chosen to specifically represent various groups within the employee population including the medical center commander. No severe difficulties were noted regarding understanding of the instrument, or its directions. One modification was made to a demographic question (#8) to provide more suitable responses.

Population

Surveys were sent to the entire population (over 1600) of medical center employees, including civilian and military workers, as well as Red Cross Volunteers. Employees had surveys addressed directly to them at their clinic locations. The employee list came from a November, 1988 computer output. The volunteer list came from the October, 1988 Red Cross volunteer roster. Surveys were not sent to volun-

teers listed on the roster as on a leave of absence, nor were they sent to volunteer registered nurses who averaged one day of work per month or less, since the likelihood of a response would be minimal and the policy would have little effect on them.

Data Collection

The survey was sent to medical center employees from the medical center mail room via distribution on 5 December, 1988. The specified return date on the survey was 15 December. Surveys were returned to Major Olive at the medical center via medical center distribution in pre-addressed envelopes included with the surveys.

In January, 1989 the returned computer sheets were scored using an automatic scanner. A total of 934 completed answer sheets were read. The scores were accumulated in a computer file and transferred directly to a VAX-11/785 mini computer.

Statistical Analyses

Statistical analyses were accomplished using SPSS^X (Statistical Package For The Social Sciences) software (SPSS^X, 1986). Initial analyses were accomplished using the Condescriptive, Frequencies, Breakdown, and Pearson Correlation procedures (SPSS^X, 1986).

IV. Results

Introduction

This chapter presents study results. Actual data used is included in Appendix C and a basic description of survey item response frequencies is shown in Appendix D. Chapter IV begins with findings concerning survey response rate and proceeds with the evidence of the policy's change on smoking behavior. From there the chapter continues with an analysis of attitudes toward the smoking policy and finally, the policy's impact on organizational behavior.

Survey Response

A total of 934 survey responses were received out of the 1613 originally sent out for an overall response rate of 57.9%. Of the 934 responses, 46 were excluded from the analysis for a total of 888 "usable" responses. One was excluded due to the apparent invalid nature of the response (the respondent marked a value of 4 for all responses after item 16). Six responses were excluded due to the admission of questionable truthfulness in responding (disagreed with item 45, "responded as they really felt"). Another 39 were excluded for failing to answer item 45 since the truthfulness of these respondents' answers would also be questionable.

With a response rate of only 57.9%, there was concern that some demographic groups might be under or over repre-

sented and therefore the survey response might not be representative of the medical center population. Analyses were accomplished to determine how representative the respondents were of the hospital population. The medical center computer data bank had employee information on positions, grades, full/part-time status, and sex. Information on employee age was available only for military personnel. Data in Appendix E compares population and respondent percentages for various demographic breakdowns. Percentages not totaling 100 are due to rounding error. The comparisons indicate that the respondents were a good representation of the medical center population.

Smoking Behavior

Smoking Prevalence. Of the 885 respondents answering question 13 regarding current smoking status, 191 indicated they were cigarette smokers while another 12 indicated they considered themselves pipe or cigar smokers. Table 4 depicts the breakdown of smokers and nonsmokers by military, civilian, and all respondents.

Of the 212 ex-smokers answering how long it had been since they quit, 22 (10.4%) indicated they quit within the last six months (the approximate time the policy had been in effect). Twelve respondents (5.7%) indicated they had quit during the six month period prior to policy implementation during which the policy implementation plans were announced (see Table 5). Of the 205 respondents answering why they

quit, only two claimed the hospital policy as the primary reason.

TABLE 4

Respondent Smoker Prevalence

Category	Percent Military Respondents	Percent Civilian Respondents	Percent All Respondents
Smokers	21.3	25.9	23.9
Nonsmokers	55.8	43.1	51.1
Ex-smokers	22.8	31.0	25.0

TABLE 5

Time Since Ex-Smokers Quit Smoking

Time	Frequency	Percent
Less than 6 months	22	10.4
6 months - 1 year	12	5.7

Note: N = 212.

Cigarette Consumption At Work. Calculations of cigarette consumption were accomplished by assigning midpoint values to each cigarette consumption range corresponding to a response. This was done with items 47 and 55, self-report measures of smoking at work now and smoking at work six months ago. Values were assigned as follows: 0 to 10 = 5, 11 to 20 = 15, 21 to 30 = 25, 31 to 40 = 35, and 41 or more = 45. Total consumption numbers may be slightly low given

the last value assignment if there are a significant number of heavy smokers who smoke more than 50 cigarettes per day.

Using these values, a change was computed for each respondent, and a mean was determined for all respondents. Respondents failing to answer a necessary question for the calculation were not included in the computations. Mean cigarette consumption at work before policy implementation was reported as 8.58 cigarettes per workday; six months after policy, 6.62 (t = 5.15, $p < .001$). This indicates an average reported daily decrease of 1.96 cigarettes per day at work.

Subjective reporting by each smoker (item 54) also indicated a perceived decrease in the amount of cigarettes smoked at work. 56% reported smoking less, 31% reported no change, 7% reported smoking more, and 6% reported they quit smoking while at work.

Daily Cigarette Consumption. Changes in daily cigarette consumption, computed using items 48 and 56, were significant. Calculations were accomplished using the same method as in the previous section. Cigarette smokers reported an average of 18.5 cigarettes smoked daily before the policy and 16.4 after policy implementation (t = 4.37, $p < .001$).

Attitudes Toward Smoking Policy

This section and the following section on organizational behavior report results using multiple-item scales, that

is, additive scales created by grouping various response items into logical groups to summarize the responses. Items to be included in the scales were determined by analyzing correlations between the individual items and various combinations of those items making up possible scales, as well as the reliability of the scale as indicated by the Cronbach's alpha value.

Scale values were computed by adding the Likert scale response values (1-7) and dividing by the number of items included in the scale. Response values for negatively correlated items were transformed, i.e. 1 = 7, 2 = 6, etc., to provide consistency within the scales. Values approaching 7 indicate strong agreement, while values approaching 1 indicate strong disagreement.

Comparisons of different demographic groups were made via t-tests. All p values indicate two tailed tests computed using a conservative separate variance estimate. For comparisons involving smokers and nonsmokers, "nonsmokers" includes ex-smokers as well as nonsmokers as defined in Chapter II. In some cases, comparisons were made between supervisors and non-supervisors based on responses to question 11. For these comparisons a dichotomous breakdown was established such that supervisors were considered as those who supervised six or more. Group comparisons were also made based on the responses of two Likert scale items, questions 18 and 43. These items were related to the re-

spondents' frequency of exposure to illness and disease (item 18) and patients (item 43). To create two groups for comparison for each item, responses were collapsed to reflect simple agreement or disagreement. Respondents answering no opinion for these items were not considered for the related comparisons.

Perceived Harmfulness Of Smoke. Over 84% of the respondents agreed with item 36, one need not actually smoke to be harmed by it. A perceived harmfulness of smoke scale was constructed using questions 22, 27, and 36. Item 36 was deleted from the scale to achieve a two item scale alpha value of .712. The scale mean value of 6.48 further substantiated respondent agreement with the idea that smoking is harmful.

Smokers and nonsmokers differed as to perceived harmfulness of smoking ($\bar{x}_s = 5.67$, $\bar{x}_{ns} = 6.73$, $t = 11.6$, $p < .001$), with smokers perceiving less harm. A similar difference was also perceived by those whose spouses smoked versus those whose spouses did not ($t = 4.16$, $p < .001$).

Respondents reporting frequent involvement with patients thought smoking was more harmful ($\bar{x}_{inv} = 6.54$) than those who reported little patient involvement ($\bar{x}_{n-inv} = 6.38$, $t = 2.22$, $p = .027$). Respondents reporting frequent exposure to illness and disease did not differ significantly in perceived smoking harmfulness from those reporting little exposure ($t = 1.45$, $p = .149$).

Policy Awareness. Nearly 85% of the respondents felt the policy was adequately publicized (item 17), but only 69.4% felt it was adequately publicized for patients and visitors (item 32). A two item scale using these items resulted in a mean value of 5.50 (alpha = .667). Smokers and nonsmokers did not significantly differ in responses related to this area (p = .065).

Policy Approval And Support. Respondents generally approved of the policy with a mean value of 5.20 for a seven item scale with an alpha value of .905. Eight items were considered for the scale (16, 20, 23, 30, 37, 40, 41, and 44), with item 30 being deleted to improve reliability. Table 6 depicts the item correlation matrix for the constructed scale items.

TABLE 6

Correlation Matrix For Approval/Support Scale Items

Item	Scale	16	20	23	37	40	41	44
Scale	1.0							
16	.88	1.0						
20	.78	.62	1.0					
23	.82	.68	.61	1.0				
37	.78	.68	.51	.59	1.0			
40	.77	.63	.60	.56	.54	1.0		
41	.78	.63	.53	.59	.53	.49	1.0	
44	.80	.69	.52	.58	.62	.56	.55	1.0

Smokers and nonsmokers differed significantly on policy approval/support ($\bar{x}_s$ = 3.34, $\bar{x}_{ns}$ = 5.76, t = 21.42, p < .001), with smokers indicating disagreement with the idea that the policy was appropriate.

Supervisors and non-supervisors differed in their perceptions related to appropriateness of the policy ($\bar{x}_{sup}$ = 5.42, $\bar{x}_{n-sup}$ = 5.15, t = 2.08, p = .038), with supervisors showing greater approval/support. Approval/support rates were also significantly higher for physicians versus non-physicians ($\bar{x}_{phy}$ = 6.14, $\bar{x}_{n-phy}$ = 5.07, t = 10.5, p < .001), employees routinely seeing illness and disease versus those not often exposed ($\bar{x}_{exp}$ = 5.33, $\bar{x}_{n-exp}$ = 4.88, t = 3.19, p = .002), and those regularly involved with patients versus those with other duties ($\bar{x}_{inv}$ = 5.34, $\bar{x}_{n-inv}$ = 4.88, t = 3.52, p < .001).

Policy Compliance And Enforcement. Three survey items, 21, 26, and 38 were related to policy compliance and enforcement. Questions 21 and 38 were reversed in meaning for this analysis to provide consistency of meaning.

Question 26 asked the respondent to agree or disagree with the statement that he had not observed violations of the policy. Overall agreement with this occurred with a mean of 4.78. Smokers and nonsmokers, as well as supervisors and non-supervisors had insignificant differences responding to this item (p = .115, p = .609).

Items 21 and 38 dealt with agreement that the policy was enforced in the respondent's work area, and enforcement in general. Responses to both items indicated agreement that the policy was being enforced although it was perceived as more strictly enforced in respondents' work areas ($\bar{x}$ = 6.19) than in the medical center in general ($\bar{x}$ = 5.21). For both questions smokers perceived greater enforcement than nonsmokers (question 21: $\bar{x}_s$ = 6.40, $\bar{x}_{ns}$ = 6.13, t = 2.20, p = .028, question 38: $\bar{x}_s$ = 5.46, $\bar{x}_{ns}$ = 5.13, t = 2.74, p = .007). Supervisors also perceived greater enforcement than non-supervisors (question 21: $\bar{x}_{sup}$ = 6.46, $\bar{x}_{n-sup}$ = 6.13, t = 2.81, p = .005, question 38: $\bar{x}_{sup}$ = 5.51, $\bar{x}_{n-sup}$ = 5.14, t = 3.16, p = .002).

Organizational Behavior

It was assumed that the policy should impact certain organization behaviors. This section starts by taking a look at organizational commitment and job satisfaction. From there, it describes the results of the items related to smoker networking during breaks. Finally, it analyzes perceived productivity changes as a result of the policy and smoking break patterns that have evolved since policy implementation.

Organizational Commitment. A four item scale representing organizational commitment had a mean value of 4.72 with large values indicating high commitment (alpha = .779). Items used for the scale included 29, 34, 35, and 39. No

attempt was made to use recall information to determine commitment levels prior to policy implementation. Scale values differed between smokers and nonsmokers ($\bar{x}_s$ = 4.21, $\bar{x}_{ns}$ = 4.88, t = 5.55, $p < .001$), and supervisors and non-supervisors ($\bar{x}_{sup}$ = 5.02, $\bar{x}_{n-sup}$ = 4.64, t = 3.13, p = .002), with higher organizational commitment reported by both nonsmokers and supervisors.

Job Satisfaction. Over 75% of the respondents agreed that they were generally satisfied with their job (item 25), while 83.1% reported they were satisfied with their work (item 42). Respondents reported a mean scale value of 5.18 for a three item scale with greater values indicating higher job satisfaction (alpha = .772). The scale included questions 25, 34, and 42. Question 34 dealt with thoughts of quitting.

Smokers and nonsmokers did not differ significantly on reported job satisfaction (p = .255). Supervisors and non-supervisors however, did differ ($\bar{x}_{sup}$ = 5.38, $\bar{x}_{n-sup}$ = 5.12, t = 2.09, p = .037), with supervisors reporting greater job satisfaction.

Smoker Networking. As a result of the new policy, it was thought that smokers would make new acquaintances at the smoking break areas. This might result in productive networking throughout the medical center. Question 28 asked all respondents to agree or disagree with whether smokers developed new relationships during breaks while question 52

asked only smokers what kind of acquaintances (none, social, or work) they had made during breaks.

Responses to question 28 indicated slight agreement with the idea that smokers made new acquaintances during breaks with a mean value of 4.63. Smokers differed with nonsmokers indicating greater agreement with the idea that new relationships were being established during breaks ($\bar{x}_s$ = 4.90, $\bar{x}_{ns}$ = 4.56, t = 2.52, p = .012).

Responses to question 52 indicated that 46% of the smokers felt that no new relationships were made, 8% felt new social relationships were made, and another 8% felt that relationships useful to work were made. 32% of the smokers felt that new relationships were made which were both useful to work and also of social value.

Break Patterns. As perhaps the most obvious impact on productivity, three questions, 49, 50, and 51, were asked of smokers regarding smoking breaks. These questions related to number of breaks daily, enroute time to a break area, and length of breaks. Results of these items are depicted in Tables 7 through 9. These tables reflect responses from all smokers (including pipe and cigar smokers), regardless of whether or not they were at the medical center prior to policy implementation.

Over 62% of the respondents reported taking two to four breaks a day. The relatively large number of responses (25) reporting no breaks per day seems to indicate an inconsist-

ency in reporting. As reported earlier, of the cigarette smokers who were working at the medical center prior to policy implementation, only 11 reported quitting while at work on question 54. Evaluating question 49 responses of the same cigarette smokers, 21 report taking no breaks. This discrepancy may indicate regular policy violations, or merely an inconsistency in reporting.

Using responses from questions 49, 50, and 51, an average time lost per smoker was computed of 49.5 minutes daily as a result of smoking breaks. Responses were used only from smokers answering all three questions. Responses were not used if the respondent answered "don't know" for either 50 or 51 resulting in 174 valid computations. Values of zero were used for smokers reporting no breaks and were included in the calculation of the mean. Midpoint time values were assigned to represent each response time range value. Values of 12.5 and 17.5 were used for responses of over 10 and 15 minutes respectively.

TABLE 7

One Way Enroute Time To Break Area

Time	Number Of Responses	Percent
Less than 5 minutes	141	71.9
5 to 10 minutes	40	20.4
Over 10 minutes	3	1.5
Don't know	12	6.1

Note: N = 196.

TABLE 8

Number Of Daily Smoking Breaks

Number Of Breaks	Frequency	Percent
1	10	5.2
2	42	21.6
3	35	18.0
4	44	22.7
5	12	6.2
6	8	4.1
7	8	4.1
8	8	4.1
9 or more	2	1.0
None	25	12.9

Note: N = 194.

TABLE 9

Average Break Time Length

Time	Number Of Responses	Percent
Less than 5 minutes	62	32.5
5 to 10 minutes	86	45.0
11 to 15 minutes	25	13.1
More than 15 minutes	6	3.1
Don't know	12	6.3

Note: N = 191.

Perceptions Of Productivity Decrease. Over 70% of the respondents agreed that productivity suffers because of

frequent smoking breaks (item 31). Smokers and nonsmokers differed significantly on responses to this item ($\bar{x}_s$ = 4.13, $\bar{x}_{ns}$ = 5.44, t = 8.18, $p < .001$), with smokers indicating less perceived decrease. Supervisors and non-supervisors did not differ significantly in response to this item (p = .953).

A two item mean scale value of 4.13 also indicated slight agreement that there had been a decrease in productivity (alpha = .552). Three items, 19, 31, and 33 were considered for the scale. Item 31 was deleted to achieve higher reliability. Questions 19 and 33 dealt with how difficult it was for a smoker to work at his best without a cigarette and the idea that much time was lost as a result of smokers not being able to smoke while working. Smokers differed in response with nonsmokers ($\bar{x}_s$ = 4.98, $\bar{x}_{ns}$ = 3.87, t = 8.81, $p < .001$), with nonsmokers disagreeing slightly. Supervisors and non-supervisors did not differ with respect to this scale (p = .612).

V. Discussion

Introduction

This chapter discusses the significance of the findings presented in Chapter IV and how these findings compared with those of previous studies. Some conclusions are drawn, and recommendations for further research are made. This chapter follows the same format as the previous chapter analyzing survey response, smoking behavior, attitudes toward the smoking policy, and finally, organizational behavior.

Survey Response

As suggested in Chapter IV, the analyses indicated the respondents were a good representation of the medical center population. Of the previous studies, only Biener et al. (1989b) reported information related to demographic representativeness. Biener et al. reported respondents "were virtually identical" to the population with relation to sex and occupational status (Biener et al., 1989b, p.193).

Table 10 shows study characteristics of this study and previous studies. With respect to percentage of the total population surveyed, this study achieved the most representation to date. Moreover, this study was based more soundly on accepted survey methodology. For example, Petersen et al. (1988) collected surveys at lunch time in a cafeteria. Both Biener et al. (1989b) and Rigotti et al. (1986) employed small samples. Furthermore Biener et al. (1989b)

used telephone surveys which have limited validity in obtaining responses to sensitive data. Thus this study significantly advances the research in this area.

TABLE 10

Survey Size By Study

Study	Population Size	Sample Size	# Surveys Returned	Percent Response Rate	Percent Of Population
Andrews (1983)	2700	--	965	--	35.7
Biener et al. (1989b)	1400	85[a]	60	71	4.3
Kain (1989)	1613	1613	934	58	57.9
Petersen et al. (1988)	2137	1501	1210	81	56.6
Rigotti et al. (1986)	--	93	85	91	--
Rosenstock (1986)	6000	687[b]	447	65	7.4

[a]85 surveys were solicited based on a random cross sectional sample (Biener et al., 1989b).
[b]687 surveys were solicited based on a systemic probability sample (Rosenstock, 1986).
Note: Portions of the data were not available for Andrews (1983) and Rigotti et al. (1986).

Smoking Behavior

Smoking Prevalence. The medical center's percentage of employees that smoke (24%) was below the Air Force 1989 percentage (28%) (Datko, 1988). This is explained in part by the large proportion of officer versus enlisted employ-

ees. Additionally, one would suspect workers involved with health care might practice healthy lifestyles.

While it might seem logical that a strict workplace smoking policy would have an impact on smoking prevalence, previous studies, as described in Chapter 2, have determined relatively small changes. A policy's impact on smoking prevalence as well as consumption would probably vary considerably, depending on the policy's "restrictiveness, amount of forewarning, [and] degree of enforcement" (Biener, Abrams, Emmons, and Follick, p.5, 1989a). Table 11 gives the numbers of smokers who reported quitting after policy implementation by study. As was the case with this study, where only two respondents reported the policy as their primary reason for quitting, Andrews (1983) also reported

TABLE 11

Smokers Quitting After Implementation By Study

Study	Number Quitting	# Smokers At Baseline	Percent
Andrews (1983)	87	335[a]	9.0
Biener et al. (1989b)	2[a]	28	7.0
Kain (1989)	22	225[a]	9.8
Petersen et al. (1988)	19[a]	284[a]	6.7
Rigotti et al. (1986)	--	--	--
Rosenstock (1986)	3	70[a]	4.3

[a]Estimate by this author based on data reported.
Note: No change was reported by Rigotti et al. (1986).

few recent ex-smokers as citing policy as their major reason for quitting.

It would appear from the data to date, that appreciable decreases in smoking prevalence should not be one of the anticipated results of implementing a strict nonsmoking policy.

Cigarette Consumption. Previous studies addressed in Chapter 2 concluded that restrictive smoking policies in the workplace decrease cigarette consumption at work. Of the four studies addressing the issue, average daily decreases ranged from 2 to 6.4 cigarettes per day, depending on which study and how long after policy implementation the survey was made (Biener et al., 1989b; Petersen et al., 1988; Rigotti et al., 1986; Rosenstock, 1986). Results of this study also confirm a decreased consumption of 1.96 cigarettes per workday. Table 12 shows how the results of this study compared with those of previous studies.

A major concern while analyzing cigarette consumption at work is whether or not compensatory smoking occurs off the job. This can be evaluated by determining changes in the total daily consumption rate and comparing them with changes in consumption at work. Results from this study give no indication of compensatory smoking off the job. In fact, the policy may have contributed to not only less consumption on the job, but also slightly less off the job. Average total daily decrease in consumption was 2.13 when

TABLE 12

Cigarette Consumption Rate At Work Comparison

Study	Baseline	1Mo	3Mo	4Mo	6Mo	12Mo
Biener et al. (1989b)	8.4	4.5	--	--	3.5	4.5
Kain (1989)	8.6	--	--	--	6.6	--
Petersen et al. (1988)	19.8[a]	--	13.4[a]	--	--	--
Rigotti et al. (1986)	5.0	--	--	--	--	2.7
Rosenstock (1986)	17.6	--	--	15.6	--	--

[a]Estimate by this author based on number of packs x 20 cigarettes per pack.
Note: Numbers indicate cigarettes consumed per workday.

computed with a difference determined for each respondent. This is slightly greater than the average daily decrease at work (1.96) indicating that the smoking pattern changes at work may have carried over slightly off the job.

As reported in Chapter II, past study results related to compensatory smoking are inconclusive. More research will have to be conducted at longer and perhaps more consistent intervals after policy implementation before significant conclusions can be drawn.

Attitudes Toward Smoking Policy

Perceived Harmfulness Of Smoke. Studies reviewed in Chapter II did not address this issue. More study would be required to include data collection at baseline, to determine if the implementation of policies impacts these perceptions. It seems quite understandable however, that smokers

would perceive less harm from smoking than nonsmokers. Certainly, smokers would use this as one rationalization mechanism for a practice which most consider hazardous.

Policy Awareness. Without adequate publicity, no policy can be expected to be effective. Results of this study seem to indicate employees generally felt there was adequate notice of the policy for themselves, but that there could be more for patients and visitors.

Policy Approval And Support. A particular concern of management following implementation of a restrictive smoking policy should be the approval and support of the policy. Support from both nonsmokers and smokers facilitates a smooth policy transition in organizations which have significant numbers of smokers.

As might be expected, smokers in this study approved of the policy less than nonsmokers. This is logical since in most cases, smokers probably have the most to lose following implementation of a policy. Using scale values of greater than four as indicating policy approval, Table 13 compares results of this study with previous studies. This survey response indicates an exceptionally low support rate by smokers as well as the lowest rate of overall support for all studies to date. This result could be interpreted in various ways. One confounding problem is the fact that the methods for determining "approval" for each study were different. Another problem is the fact that each policy is

TABLE 13

Policy Approval/Support Rate Comparison

Study	Percent Smokers	Percent Ex And Nonsmokers	Percent Overall
Andrews (1983)	83	93	88[a]
Biener et al. (1989b)	69	89	87[a]
Kain (1989)	31	89	76
Petersen et al. (1988)	--	--	--
Rigotti et al. (1986)	--	--	86
Rosenstock (1986)	36	93[a]	85

[a]Estimate by this author based on data reported.
Note: Figures expressed as percentages of respondents by group. Petersen et al. (1988) did not ask any related questions. Portions of the data were not available for Rigotti et al. (1986).

different in its restrictiveness. The policy in this study was the most restrictive in nature of all studied to date. In most other cases, smoking was allowed in designated areas within the facility. The restrictiveness of this particular policy certainly would explain to some extent the lower approval rate. Further studies should examine correlations between approval rates and restrictiveness of policies. Another possibility, however, is that the implementation of the policy was not carried out well. This was one possible explanation given for the low approval rate of smokers in the Rosenstock (1986) study where employees apparently mistakenly believed that the policy was not necessarily permanent.

Other demographic groups besides smokers and nonsmokers reported significant differences in support. Those reporting greater support included individuals whose spouses did not smoke, supervisors, physicians, and employees routinely involved with patients, illness and disease. One factor determining these differences is certainly the prevalence of smokers in one of the two dichotomous groups. For example, the higher frequency of smoking spouses among respondents who smoke (33%) versus nonsmoking respondents (10.9%) is probably a likely explanation in part for the differences in support among those groups. Another explanation for these differences is the relative dedication to the mission of healing these groups may have. For example, it might be assumed that since a physician has spent considerable time and effort in his training, he may be more committed to healing and therefore a policy promoting health such as a nonsmoking policy, than a non-physician.

Policy Compliance And Enforcement. Comparisons with previous studies in this area are difficult due to the diversity of measurement methods used. Andrews (1983) described overall good compliance, but this report seems to be a subjective assessment by management. Biener et al. (1989b) used respondents' reports of being bothered by smoke after policy implementation as a measure of air quality, but this could also be construed as a measure of compliance. Rigotti et al. (1986) used self-reported and observed viola-

tions, and air quality as measures of compliance, but little information was available as no extensive documents related to that study have been published.

Results of this study seem to indicate adequate compliance and enforcement. Interestingly, smokers and supervisors perceived more stringent enforcement than nonsmokers and non-supervisors. The first instance might be a result of the possibility of smokers considering the policy as being targeted toward them. As such, it is more likely to be in the forefront of the thoughts of smokers rather than nonsmokers. The fact that respondents perceived greater enforcement in their own work areas than in the medical center in general is interesting. This may simply be a case of lack of involvement in other work areas, or a simple case of "the other man's grass appearing greener."

Organizational Behavior

Organizational Commitment And Job Satisfaction. The higher self-reported organizational commitment of nonsmokers and supervisors may be unrelated to policy implementation. These two comparisons also certainly reflect the higher proportion of nonsmokers among supervisory personnel. One would certainly expect, if supervisors are selected based on ability and previous accomplishments, that supervisors would have greater commitment to the organization and its goals. This might very well occur regardless of the existence of a smoking policy.

No related baseline data was collected in the area of organizational commitment. Future studies should attempt to collect baseline data so that postimplementation comparisons can be made to see if policy implementation seems to affect these perceptions.

It is interesting to note that reported job satisfaction did not differ significantly between smokers and nonsmokers. Although smokers generally approved less of the policy, the policy apparently had little to no impact on their job satisfaction levels compared to those of nonsmokers. This must be confirmed in future studies with collections at baseline to confirm no changes. The significant difference in job satisfaction between supervisors and nonsupervisors could perhaps be explained in a similar fashion as differences in organizational commitment.

Smoker Networking. Approximately 40% of the smokers reported some work related value gained from the new acquaintances made at smoking break areas. Although it would be difficult to place a value on this gain, it might be of some consideration for management when considering implementation of a smoking policy. This would be especially true in highly fragmented organizations where communication is minimal but desirable.

Approximately 40% of the smokers also felt some social benefits were gained by smoking breaks. The social impact of meetings in smoking areas could be both beneficial and

detrimental. Smokers can perhaps achieve the mutual support necessary to handle a policy that many might consider harsh. Frequent meetings in the smoking areas could however, create a split in the employee population, or make an already existing split wider.

Break Patterns. The average time loss of 49.5 minutes per smoker per day is something that could have monetary value assigned to it. Much work has been done to determine the quantitative costs of smoking to companies. Future efforts in this area should attempt to weigh the losses of smoking with financial losses incurred from implementing a policy. Although there are more than just financial issues involved, management needs to know the anticipated cost impact of a nonsmoking policy. Other costs besides the cost of smoking breaks might be significant. The cost of implementing the policy (consultants, signs, cessation programs etc.) must be considered. Although studies to date do not indicate a high rate of employees quitting their jobs as a result of policy implementation, the costs of replacement hiring might also be considered.

Perceptions Of Productivity Decrease. Over 70% of the respondents reported a decrease in productivity. Whether this is actual or perceived it could well impact actual productivity as well as morale in general. It is understandable that smokers would report a less severe productivity decrease as this amounts to reporting themselves defi-

cient. Future studies should attempt to rely on other measures of productivity besides self-reported perceptions. Using these measures both at baseline and after implementation, actual productivity changes can be compared with perceived changes.

VI. Conclusion

Summary

This study investigated the results of the implementation of a strict nonsmoking policy at a USAF medical center. Areas of interest for the study included changes in smoking behavior, attitudes toward the policy, and organizational behavior after policy implementation.

A literature search highlighted the changing attitudes of the American public toward smoking in public and the perceived and actual dangers of second hand smoke. The literature search revealed only five previous studies (Andrews, 1983; Biener et al., 1989b; Petersen et al., 1988; Rigotti et al., 1986; Rosenstock, 1986). A lack of consistency in methods employed, sample sizes, sample timing, and organizations sampled made comparisons and conclusions difficult to determine. Some conclusions about previous studies however, were made. These studies indicated policies are usually well supported by both smokers and nonsmokers, compliance is generally good, and decreased smoking while at work can be expected (DHHS, 1986). Previous studies did not evaluate areas of organizational behavior.

This study was based on a survey conducted six months after policy implementation at a USAF medical center. The sample size included the entire employee population and the response rate yielded the highest percentage of the population yet achieved in a similar study. Sample size for this

study was consistent with the larger previous studies. The policy implemented at this institution was probably the most strict policy evaluated to date in that smoking was virtually banned inside of the facility with virtually no exceptions. This study was apparently the first of its kind in a military setting. Respondents were very representative of the population with respect to position, grade, job status, age, and sex.

Unlike two of the three previous studies evaluating policy support, this study indicated relatively little policy support from employees who smoke (Andrews, 1983; Biener et al., 1989b; Rosenstock, 1986). Of the four now existing studies evaluating support by smokers and nonsmokers (including this one), two have shown good support from smokers while the other two have shown less than desirable support from the smoking population (Andrews, 1983; Biener et al., 1989b; Rosenstock, 1986). Support levels after implementation are probably a function of policy severity as well as methods employed for policy planning and implementation. These relationships deserve further study.

Results related to smoking behavior and policy compliance were consistent with previous results. While smoking prevalence did not decrease significantly, cigarette consumption at work did. Compensatory smoking off the job was not evident in this study. Further study of the issue of compensatory smoking is needed, as previous studies are

inconclusive. Part of the problem with studying this issue is that compensatory smoking is probably a function of time (as well as other things) after policy implementation. The previously cited lack of consistency in studies to date makes conclusions on this issue difficult. Analysis of a follow-up study conducted twelve months after policy implement will help look at this issue further.

While the reported levels of job satisfaction between smokers and nonsmokers did not differ significantly, the levels of organizational commitment did. This may be more a function of variables such as education level, position, or grade, than it is of smoking status.

Time lost from smoking breaks amounted to 49.5 minutes per day per smoker. This is certainly a financial consideration for any management team. Comparisons should be done to weigh the costs of smoking in the workplace with the costs of a restrictive policy. "Costs" evaluated must invariably include tangible costs such as health insurance, damage to property from smokers, policy implementation costs and costs of smoking breaks, as well as intangible costs such as a split in employees, increased nonsmoker motivation, and decreased smoker motivation. Comments from respondents of this survey indicated concern over the image presented by a medical center where every entrance is surrounded by a congregation of smokers. Additional concern (if not downright anger) was expressed by many nonsmokers

required to take up the slack of smokers absent from their duties for smoking breaks. Since an overwhelming 70.2% of the respondents perceived a decrease in productivity, other measurement methods conducted both at baseline and after policy implementation are needed.

Closing Comments

As with many studies, this one seems to have asked more questions than it answered. More studies are needed in this area to help provide both military and civilian managers the information they need in deciding appropriate courses of action. In many cases today, inaction will not be acceptable. Air Force regulation dictates action in the Air Force setting. The costs of a poorly implemented, or poorly designed policy have the potential to be severe. Hopefully with enough study, managers can provide a healthy environment for both smokers and nonsmokers without appreciable reductions, and perhaps even increases, in productivity.

Appendix A

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330–5000

AF REGULATION 30-27

19 July 1988

Personnel

SMOKING IN AIR FORCE FACILITIES

This regulation establishes procedures to control smoking in Air Force-occupied buildings and facilities. It does not cancel or supersede other instructions that control smoking because of fire, explosive, or other safety hazards. It implements DOD Directive 1010.10, 11 March 1986, and applies to all Air Force, Air Force Reserve, and US Citizen civilian personnel. It also applies to non-US citizen direct and indirect hire personnel, according to local custom and host country laws and agreements. It does not apply to Air National Guard units and members, except when serving on active duty or active duty for training, or when federalized, respectively. Major commands may adopt more restrictive supplements.

1. Background. The Air Force:

a. Supports the findings and the recommendations of the Surgeon General of the United States regarding the hazards of smoking.

b. Must ensure the best possible conditions for the health and welfare of all its personnel.

c. Recognizes the rights of workers and visitors in Air Force facilities to have an environment reasonably free from contaminants.

d. Supports the objectives of DOD Directive 1010.10, 11 March 1986, to create a social environment that supports abstinence and discourages use of tobacco products, to create a healthy working environment, and to provide smokers with encouragement and professional assistance in quitting.

2. Scope of This Regulation. Through this regulation, the Air Force intends to provide the best possible conditions for the health and welfare of its people.

3. Policy on Smoking. Nonsmoking is the acceptable organizational norm. Air Force personnel must not smoke in facilities except in "designated areas" that nonsmokers do not have to frequent. Designated areas may include outdoor areas, empty rooms, and infrequently used hallways. Consider distance from the workplace, ventilation, and airflow. If there is inadequate space and ventilation, smokers must not smoke in the area. Unit commanders should consult unions from the onset. Unit commanders must identify designated smoking areas in buildings under their control. Commanders will resolve conflicts, due to the provisions of this regulation, in favor of the nonsmoker. Final approval authority rests with the installation commander. Unit commanders will ensure that smokers do not smoke tobacco products within Air Force facilities listed below and will ensure smokers comply with the following guidelines:

a. Auditoriums. Place receptacles for disposing of cigarettes, etc., near entrances. Prominently post no smoking signs , and do not permit the use of ashtrays.

b. Eating facilities, lounges, and bars, except in designated areas. Base the location and size of the designated smoking areas primarily on the fact that the ventilation system and air movement pattern are sufficient to protect the health and comfort of nonsmoking patrons served.

c. Elevators.

d. Shuttle vehicles (government motor vehicles that transport government employees on a service basis), buses, and vans.

e. Medical treatment facilities, except in specifically designated areas. These areas will be extremely limited and far removed from all inpatient and clinic areas. Do not consider private offices used for patient care as designated smoking areas. Medical treatment facilities must not sell tobacco products. Medical staff will not smoke in the presence of patients. Patients may smoke only in extreme conditions and must

---

Supersedes AFR 30-27, 29 March 1978. (See signature page for summary of changes.)
No. of Printed Pages: 4
OPR: SGPA (Lt Col James A. Wright)
Approved by: Brig Gen Rufus M. DeHart
Writer-Editor: R. M. Downey
Distribution: F

have the attending physician's written orders to do so. The provisions of this paragraph also apply to Air Reserve medical units.

f. Conference rooms and classrooms. (When an office uses conference rooms and classrooms as normal work areas, the guidelines in g below apply, and personnel must not use ashtrays in these areas.)

g. Work or break areas used by nonsmokers. "Designated Smoking" as specifically requested, will meet the conditions as outlined in paragraph 3.

h. Corridors, lobbies, and restrooms. Unit commanders may designate these areas as smoking areas only in unusual circumstances and these areas must meet the criteria of paragraph 3.

i. Morale, welfare, and recreation (MWR) activities (in gymnasiums and fitness centers) and restricted in child care youth centers, except in designated smoking areas where patrons are not allowed. For all other MWR activities, the installation commander will establish the policy and where appropriate, prohibit or restrict the use of tobacco products in accordance with the intent of this regulation.

j. Commissary sales stores and storage areas. Installation commander or designee may establish designated smoking areas for employees in coordination with base fire marshals. (Army and Air Force Exchange Service Manual 17-1, Occupational Safety and Health Program, prohibits smoking in exchange retail customer contact and storage areas.)

k. Dependent schools. Students attending Department of Defense Dependent Schools (DODDS) or Section 6 schools must not smoke on school grounds, except as provided by policy promulgated by the Director, DODDS. Faculty, visiting adults, and staff may smoke only in specifically designated areas and must not smoke in the presence of students.

l. Cargo and passenger aircraft:

(1) Smokers must not smoke:

(a) On board all aeromedical evacuation flights.

(b) On all flights if planned flight duration is 2 hours or less.

(c) On all aircraft with less than 30 usable seats.

(d) Cigars and pipes.

(e) In restrooms and aisles at all times.

(2) Major Commands may further restrict smoking on aircraft assigned to the command.

(3) In combat missions, the troop commander may permit smoking aboard troop transport aircraft after proper coordination with the aircraft commander, consistent with flight safety and operational concerns.

m. Training and education centers. Smokers should refrain from smoking while in all formal training and education programs, with the following specific restrictions:

(1) BMTS. Trainees must not smoke during duty hours and must only smoke in designated areas after duty hours. Instructors and staff will not smoke in the presence of students.

(2) OTS. Trainees must not smoke during duty hours and must only smoke in designated areas after duty hours. Instructors and staff will not smoke in presence of students in the work environment.

(3) USAFA. Cadets must not smoke during the basic cadet training phase. Smokers must use designated areas during all other phases. Instructors and staff will not smoke in the presence of students in the work environment (this includes upper class cadets training basic cadets at the USAFA).

(4) At AFROTC, AFIT, UPT, PME, and All Technical and Professional Training Settings. Smokers may only smoke in designated areas as identified in paragraph 3.

4. Billeting and Dormitories. The billeting officer will not billet smokers and nonsmokers together. The installation commander or designee should designate common areas in dormitories with maximum concern for the nonsmokers who use the area.

5. Signs. Facility managers will post signs at the major entry ways to all facilities. These signs should read "Smoking is prohibited except in designated areas." When the unit commander approves an area for smoking, the area will have a Designated Smoking Area, sign. These signs will be uniform in design and compatible with the interior design of the facility. Areas designated "No Smoking," due to the policies in this regulation, do not require signs; however, "No Smoking" signs are still required in areas posted "No Smoking" for fire, explosives, or safety hazards.

6. Policy on Civilian Personnel. The local implementation of this policy must conform to AFR 40-711, Labor-Management Relations.

7. Education Programs. Commanders will add education programs to discourage smoking in base health promotion programs, as specified by the Air Force Surgeon General. The programs should include lectures, films, pam-

phlets, and posters. Instructors will update their material frequently to include information about the latest available medical information on smoking and health.

a. As part of routine physical and dental examinations and at other appropriate times, health care providers will inquire about the patient's tobacco use, including use of smokeless tobacco products; and will advise him or her of the risks associated with use, the health benefits of abstinence, and where to obtain help to quit.

b. Health care providers will advise all pregnant smokers of the risks to the fetus.

c. The servicing medical treatment facility should make available smoking prevention programs in DOD Dependent Schools and Section 6 schools, when requested.

d. Commanders must give support to all personnel who make a conscious decision to quit smoking to follow through and quit. Therefore, every installation in the Air Force will provide on-base smoking cessation classes. Commanders must ensure these ongoing classes are offered. The Director, Base Medical Services will appoint instructors, conduct necessary training, and provide health care provider oversight of these programs. As a minimum, each medical treatment facility will offer a cessation program during duty hours and another during nonduty hours, at least on a quarterly basis. Providers will manage, not necessarily teach, these programs.

e. Commanders will not routinely provide smoking cessation classes to reservists on Air Force Reserve bases. Reservists at these bases may attend such classes if available through a local active duty military facility or occupational health clinic, etc. Attendance at smoking cessation classes in the civilian community must be at the member's expense. The intent of this paragraph is that it apply only to straight reservists while in a military status. It does not apply to pure civil service employees or air reserve technicians (ART) while in their civilian pay status. The following special considerations also apply to reservists:

(1) Inactive Duty Training (IDT). Air Force Reserve members on IDT will not be provided smoking cessation classes. The member's private physician or health care provider will refer these members to appropriate smoking intervention programs at their own expense. Smoking cessation and other intervention programs are readily available in the civilian community and it is the member's responsibility to take advantage of these resources.

(2) Active Duty for Training (ADT). Air Force Reserve members on ADT may attend smoking cessation programs if locally available through an active duty military facility during the period specified in orders. However, those members on tours of active duty or active duty for training of less than 30 days may only attend smoking cessation programs at the discretion of the supervisor and if training time and mission requirements permit. Issuance or extension of orders for the purpose of attending a smoking intervention program is not permitted.

8. **Additional Guidance.** Air Force personnel should refer questions on overall policy or implementation of this regulation that cannot be answered locally to HQ USAF/SGPA, Bolling AFB DC 20332-6188, through major commands (MAJCOM) or separate operating agency (SOA) office of primary responsibility (OPR) channels. Every attempt should be made to resolve questions locally or at intermediate headquarters before submitting them to HQ USAF. Air Force Reserve units will submit questions through the unit level OPR and command authorities for resolution. Every attempt will be made to resolve questions at the lowest possible level. Questions that cannot be resolved locally will be submitted through each level of command for resolution, i.e., numbered air force command channels, HQ AFRES/SG, and HQ USAF/SGPA.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

LARRY D. WELCH, General, USAF
Chief of Staff

WILLIAM O. NATIONS, Colonel, USAF
Director of Information Management
and Administration

SUMMARY OF CHANGES

This revision actively promotes no smoking as the norm (para 1d); adds policy that unit commanders will designate no smoking areas in favor of nonsmokers in the event of conflicts (para 3); prohibits tobacco sales in Air Force health care facilities (para 3e); prohibits smoking by students of DOD Schools on school grounds (para 3k); prohibits smoking on all aeromedical evacuation flights, on aircraft with less than 30 seats, and on flights of less than 2 hours duration; and restricts smoking on larger aircraft (para 3l).

*U.S. GOVERNMENT PRINTING OFFICE:1988-201-372:80479

Appendix B: Survey

DEPARTMENT OF THE AIR FORCE
USAF MEDICAL CENTER,

REPLY TO ATTN OF: SG

18 November 1988

SUBJECT: Medical Center Smoking Policy

TO: All Medical Center Personnel

1. Since 1 July 1988, the Medical Center has not permitted smoking in the hospital. Major Ken Olive, an Internal Medicine physician , and researchers at the Air Force Institute of Technology (AFIT/LSR) are examining effects of this policy.

2. The attached questionnaire has been designed to determine attitudes and behaviors relating to smoking and the Medical Center policy. The questionnaire is based on similar surveys at other hospitals and organizations where smoking policies have changed.

3. Please take time to participate in this important survey. Your responses will be completely anonymous. Please complete the questionnaire as soon as possible but not later than 15 December and return the questionnaire and answer sheet in the envelope provided through Medical Center distribution to Major Olive.

4. Your participation is greatly appreciated. At a later date a report of study results will be made available for anyone who would like to review it.

5. Should you have any questions about this study or the questionnaire, please call Major Olive at 79656 or the AFIT Project Officer, Lt Col John Ballard, at 54529.

Commander

3 Atch
1. Questionnaire
2. Answer Sheet
3. Return Envelope

Note: Survey has been altered for publication in thesis to preserve anonymity of medical center.

MEDICAL CENTER SMOKING POLICY SURVEY

INSTRUCTIONS

1. Do NOT put your name or SSN on the answer sheet or questionnaire. This survey is strictly anonymous. No identification is required.

2. For each question, select the answer most appropriate for you. Then mark your answer on the answer sheet. Please use a No. 2 pencil and completely blacken the circle.

MEDICAL CENTER SMOKING POLICY SURVEY

PART I: DEMOGRAPHIC INFORMATION

1. What is your sex?

   (1) Female
   (2) Male

2. What is your age?

   (1) 20 or less
   (2) 21-30
   (3) 31-40
   (4) 41-50
   (5) 51-60
   (6) 61 or more

3. For enlisted personnel, what is your grade?

   (1) E-1
   (2) E-2
   (3) E-3
   (4) E-4
   (5) E-5
   (6) E-6
   (7) E-7
   (8) E-8
   (9) E-9
   (10) Not applicable (i.e., commissioned officer or civilian)

4. For commissioned officers, what is your grade?

   (1) O-1
   (2) O-2
   (3) O-3
   (4) O-4
   (5) O-5
   (6) O-6
   (7) Not applicable (i.e., enlisted or civilian)

5. For wage grade employees, what is your grade?

   (1) Not applicable, not wage grade employee
   (2) WG-2
   (3) WG-3
   (4) WG-4
   (5) WG-5
   (6) WG-6, WG-7
   (7) WG-8, WG-9
   (8) WG-10, WG-11
   (9) WS-8

6. For other civilian employees, what is your grade?

(1) Not applicable (i.e., military, wage grade, etc.)
(2) GS-2, GS-3
(3) GS-4, GS-5
(4) GS-6, GS-7
(5) GS-8, GS-9, GS-10
(6) GS-11
(7) GS-12
(8) GM-13
(9) GM-14
(10) GM-15

7. What is your racial or ethnic background?

(1) American Indian
(2) Black
(3) Caucasian/White
(4) Asian American
(5) Hispanic
(6) Other

8. What is your primary position?

(1) Physician
(2) Nurse
(3) Physician assistant or nurse practitioner
(4) Technician or technologist
(5) Other medical staff (pharmacist, physical therapist, etc.)
(6) Hospital administration
(7) Secretarial and clerical administration
(8) Support (housekeeping, maintenance, etc.)

9. What is your education level?

(1) Some high school (did not graduate)
(2) High school graduate or equivalent (no college)
(3) Some college but less than two years
(4) Two or more years of college (may include associate degree but no bachelor's degree)
(5) College degree (BS, BA, or equivalent)
(6) Graduate work beyond bachelor's degree (no master's degree)
(7) Master's degree
(8) Graduate work beyond Master's degree (no doctorate)
(9) Doctorate (e.g., M.D., Ph.D., J.D., D.V.M., D.D.S.)

10. What is your job status?

(1) Full-time
(2) Part-time
(3) Temporary employee
(4) Volunteer

11. Do you supervise other employees?

(1) No
(2) Yes, 5 people or less
(3) Yes, 6-10 people
(4) Yes, 11 people or more

12. How long have you been assigned to or employed at Wright-Patterson Medical Center?

(1) I began working here after 1 July 1988
(2) I began working here between 1 July 1987 and 1 July 1988
(3) I was working here before 1 July 1988 but have worked here five years or less
(4) I have worked here over 5 but less than 10 years
(5) I have worked here ten years or more

13. What is your current smoking status?

(1) Never smoked
(2) Currently cigarette smoker
(3) Currently pipe smoker
(4) Currently cigar smoker
(5) Ex-smoker

14. Do you currently live with someone who smokes?

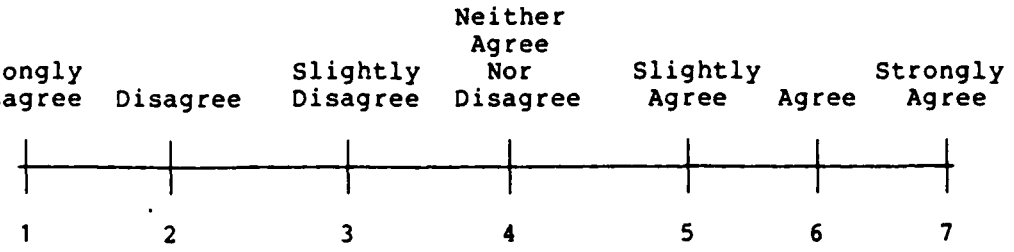
(1) No
(2) Husband, wife, significant other
(3) Child
(4) Other

15. Do any of your co-workers in your work area smoke?

(1) None
(2) One or two
(3) A few
(4) A lot
(5) Don't know

PART II: ATTITUDINAL INFORMATION

Using the scale below, indicate to what extent you agree or disagree with the following statements.



16. The hospital's policy of not allowing smoking in the hospital is appropriate.

17. The smoking policy for hospital personnel is adequately publicized.

18. In my position I am involved directly in patient care (i.e., inpatient, outpatient) most of the time.

19. It's difficult for a smoker to work at his/her best when the smoker has an unsatisified desire for a cigarette.

20. Nonsmokers have no right to force a non-smoking policy on smokers.

21. Smoking restrictions are not enforced in my work area.

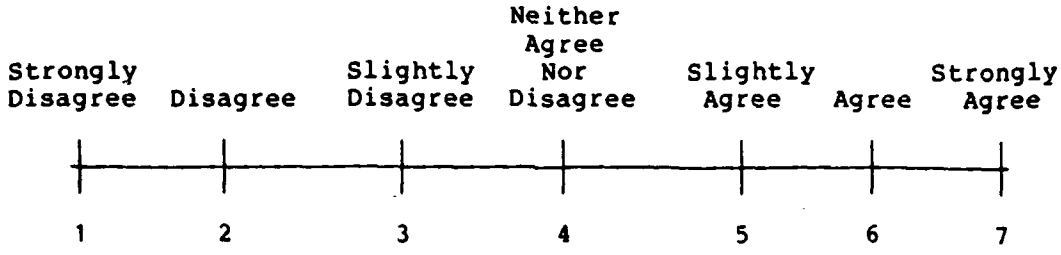
22. Smoking is harmful to both smokers and non-smokers.

23. Policies that restrict smoking are unfair.

24. I consider myself in good or excellent health.

25. Generally speaking, I am very satisfied with my job.

26. Since the restricted smoking policy has gone into effect (1 July 88), I have not observed anyone smoking in the hospital.



27. Smoking is harmful to one's health.

28. At the designated smoking areas, smokers develop new relationships with hospital co-workers which might not develop otherwise.

29. This organization is interested in the welfare of its people.

30. Non-smokers have a right to work in a smoke-free environment.

31. Productivity suffers because of frequent smoking breaks.

32. The smoking policy for patients and visitors is adequately publicized.

33. A great deal of time is lost as a result of not allowing smoking and working at the same time.

34. I frequently think of quitting this job.

35. Often I find it difficult to agree with this organization's policies on important matters relating to its employees.

36. You need not smoke cigarettes to be harmed by them.

37. The restricted smoking policy sets a good example for patients.

38. The smoking policy is poorly enforced.

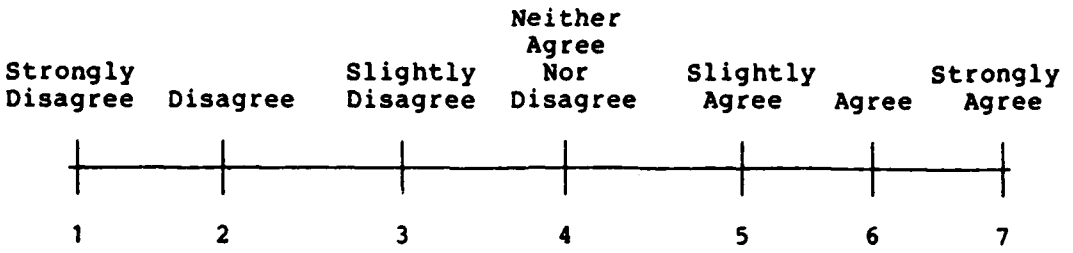
39. I really don't feel a part of this organization.

40. The restricted smoking policy is fair to smokers.

41. A smoker should be permitted to smoke in his/her own work area.

42. I am generally satisifed with the kind of work I do in this job.

43. In my position I routinely see illness and disease.



44. The overall effect of the restricted smoking policy on the work environment has been positive.

45. In answering these questionnaire items, I've tried to respond the way I really feel.

If you smoke.....go to Part III: FOR SMOKERS

If you are an ex-smoker.....go to Part IV: FOR EX-SMOKERS

If you are not a smoker
and have never been a smoker.....go to Part V: COMMENTS

PART III: FOR SMOKERS

46. How long have you smoked?

(1) Less than 1 year
(2) About 1-2 years
(3) About 3 years
(4) About 4 years
(5) About 5 years
(6) 6-10 years
(7) 11-15 years
(8) 16-20 years
(9) Over 20 years

47. On an average day, how many cigarettes do you smoke at work?

(1) 1/2 pack or less (0-10)
(2) Between 1/2 pack and 1 pack (11-20)
(3) Between 1 pack and 1 1/2 packs (21-30)
(4) Between 1 1/2 packs and 2 packs (31-40)
(5) Over 2 packs (41 or more)

48. On an average day, how many cigarettes do you smoke (including at work and elsewhere)?

(1) 1/2 pack or less (0-10)
(2) Between 1/2 pack and 1 pack (11-20)
(3) Between 1 pack and 1 1/2 packs (21-30)
(4) Between 1 1/2 packs and 2 packs (31-40)
(5) Over 2 packs (41 or more)

49. On the average, how many breaks do you take each day to smoke?

(1) 1
(2) 2
(3) 3
(4) 4
(5) 5
(6) 6
(7) 7
(8) 8
(9) 9 or more
(10) none

50. How long does it take to get to a smoking area from your work area?

(1) Less than 5 minutes
(2) 5-10 minutes
(3) Over 10 minutes
(4) Don't know

51. On the average, how long are your smoking breaks (excluding getting to and from the smoking area)?

(1) Less than 5 minutes
(2) 5-10 minutes
(3) 11-15 minutes
(4) More than 15 minutes
(5) Don't know

52. Have you made new acquaintances during breaks at the smoking areas?

(1) No, not really
(2) Yes, new social contacts
(3) Yes, useful work contacts
(4) Yes, both new social contacts and useful work contacts

53. What effect has the hospital's smoking policy had on your productivity at work?

(1) No change
(2) I am less productive
(3) I am more productive

54. What effect has the hospital's smoking policy (implemented 1 July 88) had on the number of cigarettes you smoke at work?

(1) No change
(2) I smoke more
(3) I smoke less
(4) I no longer smoke at work
(5) I no longer smoke at all

55. As best you can recall, before the policy began on 1 July 88, about how many cigarettes did you smoke at work on an average day?

(1) 1/2 pack or less (0-10)
(2) Between 1/2 pack and 1 pack (11-20)
(3) Between 1 pack and 1 1/2 packs (21-30)
(4) Between 1 1/2 packs and 2 packs (31-40)
(5) Over 2 packs (41 or more)

56. As best you can recall, before the policy began in July 88, about how many cigarettes did you smoke (including at work and elsewhere) on an average day?

(1) 1/2 pack or less (0-10)
(2) Between 1/2 pack and 1 pack (11-20)
(3) Between 1 pack and 1 1/2 packs (21-30)
(4) Between 1 1/2 packs and 2 packs (31-40)
(5) Over 2 packs (41 or more)

57. Have you ever tried to stop smoking?

(1) No, never
(2) Once or twice
(3) Several times
(4) Many times

Please go to PART V: COMMENTS

PART IV: FOR EX-SMOKERS

58. How long has it been since you quit smoking?

(1) Less than 6 months
(2) 6 months but less than 1 year
(3) 1 year but less than 2
(4) 2 years but less than 4
(5) 4 years but less than 6
(6) 6 years but less than 10
(7) 10 years or more

59. Why did you quit smoking?

(1) Health reasons
(2) Family or friends
(3) Hospital policy
(4) Other

PART V: COMMENTS

Please use this section to make any comments you desire about smoking, the smoking policy, or the survey.

Thank you for participating in this survey. Please return the questionnaire and answer sheet in the envelope provided through distribution to SGHMI.

Appendix C: Survey Data

Note: Numbers listed are 1 less than actual responses. This facilitated column placement of the data, especially for responses of value 10. Values were recoded for analyses. Columns correspond to question numbers (i.e., column 1 is question 1).

```
012600233001112135660445535625134335133035303501301311011
129300208000002556310515556446454044421525535
129200024013400551220505656565410014511515156              30
0396052 601100165030061555646545311643141514 5
129200208012302256541516666455454005544226636
113600231002001556411616006556512616341410636
101600131000013366330666366433313636313235626
125600032010402630000606336336313336633503036              33
149650232004401666003606606366660000660606666              61
113600232002112010560343633315104663336055016602301000022
124600042013020564500365464123353344003144616601313000 2
039602272002403151660555206433656545415355116              13
11    2319121120555204454656555251341112444255021013120 21
04   411400400105516560606655664516660110554 5
029604214101001256340615456335452445404244635
032043215011403616101606116346502646642602566              53
135600033013002663600605556566666346650666366
119200208012002656300606406356666346632615656
114600232013002460313636603352533533 46 666044
039604212212403165540546566335656435505545506 61
029602264002001664000606556556 35 146611604666
049600223302002555111515555355451115511315455
139300247011111666000506666666061066004911456700200202012
113600063020401652440616656266222146621412455              20
012600232001112053461366643545343153111135416511300302022
139500208011 016560006063563564515366126566 6               0
112600231012001156640646666365666046300556616
149605256012401651300305646366344034111365036              53
159400251300401665550600616566463066606605566              63
039604214111011656501605416356454416611504556
029300208001001666105606516366150116610605666
029603152004403443565546555555656015500634566              33
01   2161002402615301615116316311556615565655              63
149996248004400656000606666460050006610606566              61
138600233003411661600606566156564106610505266              20
025600271021000640300605466536645336636445046
04  5 27100430213 651363133131535551135052335 8  933013  2
112600232002002655510615316356521335421305546
029300246021001656330336466555232434312315646
029200257012403660300606566326564146600605066              33
1396 3155002113360460 655636330663234000650368 22 01300221
019602252002103133661363653363636034330066116623601012332
129 002080124016541026066563664300266106066 6              40
014600434012001644230616566556544115510325546
```

```
139400246024006666300605556356551115515555
119100246030002653201616526456232156543425355
124600231012402651300666666566454000600446056                63
019100214002002666310605306346561346650404666
113600232012001616400605426056610536605505656
113600231002012116424545105135511555441522646
119100214012002155321515255356651446312315545
113600233002003656436625056306343665333310626
113600433012131156560445004325014665235165626400001000001
113600232012002636400606006316514656345300636
0196002 430100066630060556635624201661120656
059602261004400661301602456356150316501505256               63
 13   16200010226066062566646615333333333333                 03
029100214010002325533435445334223332233334 33
111600232000412656511615156555353555512555556 10
102600132001002356330546465454353334312224535
019200214012002655411615456355451145243514645
019100214012001666400606016526160656623630666
029604213012111326461335514534023453135135536701111202012
029200255021000660300606556456554006510505466
019000214010104656041515505066113016511515656301900003011
049602263003111050460566655536353044131515546701200002120
149605234013202244351445364644343153134443535801200300001
05   413410300166055660336666666635660060 5666
039904235013001664000605466666660566606605666
029200213023002660000606666666444026640606666
049602133004000666661616266666661346616113666
123600332002002603311635156556606666635106056
102600242001002663311606456356454034631404346
013600243002001644211616556355431326511515045
116600533033133466660313363666063016300106636500101302012
113600232002003550440616606155455016521445046
014600232012113006560266502622006660016064606603101302031
0396 225100001015156056555535065601550005 5015
113600231000132253260515355665515314500413256401100300030
149400248032002665400606626366460006610506366
101600231001001660600606666566666036643335056
012600232002102260510645666566152006004056016401401000011
113600533002012650602605555655655056541616036
113600234002001655321536425346552335543323356
129200208010002653115165263563431356322156 55
125600133014011665530533366655553333603035555
04   2  100 12225555155555245221245244 05555               63
1293002080004026664  606566556453216613306366 0
119100256000301660100606616366161006510515056500 90  00000
029300245021001565300615566346151336513315656
125600233021102544510414466525344644601234246601200302012
114   232001102456546642566155455234464445245503022022131
129300257002400440400606366535442535514346446               00
129300208010401636400606466336433446601316666               40
 496002623020015513305146563554530355115 1 455
100600251000032441311535555555353032611336036
```

```
1192002480000046563006045665463520364215655560
03   22620024021534202660335236566233130511351363
1394002480220026661026065563663510266106066660
1246002330320006663036066660666603066306056660
029603252013103030660566364344636142014064006601400212022
11 2  208002000666403515466531151245524512555
1146001320120004564416165665553641264105166360
1136002320120016665606035666666665566006566560
0296042142 200166630460654636613101665160666 6
13 5  256021000661610606626366341016610006166
1136001330121014665405441554152536542552456262011113000110
1496092080344026560006066665665504456116056661353
1136002320030036660066066060366603366606066660
013   132002002666600606066666666666666060050600
0196022620030026503016655263564411366135043660
1496041320244122563602155570551350633150246060140
0290002140210026463006055063561511166212055660
1136002320020321465513554053344566634351516360
0292  214013002666100904256346551656504511655
12 300215012000646210606346346411545511505555
1293003150314125662305364463565533455223246560140
0296032620040004512315454651463311344111151350
1496021320040006666606066636666502660066666660
1396062450130026600016055360666520466216061460
1191002450120016333333333333333333333333333333333333333333
0296022630020023305206455553555451354343250450
03990226100400 3315303355533 5151 3360 63603
1191002450120026601006065165664510066105051560
1292002440100025505106166664564511155115151560
124600 330120024505316254563455664456344330360
0191001140121024566606460560052566655050456063002100100020
019100214012401656001606416116550556543505656153
1126002320024016552006053063466505306116055665300
1136000330124016666006666060061656666000066060
12      303 403250560553255133653343311352226153
1136002340120320515606665661064343560010156060
0196002 330000064530360552655631313664361536500
1292002150120036663006064663265521366135166600
14  022620021022601403166540110611135004155368019003000120
1126002330000026465406445653554430154302156460
1292002560324020633006065264464254466001150361000
013600233002130166620646516666565115511235655601101302012
1126002360010026603006066665666360006306060360
0296052460020136505006043563366545666355461560
0256002320121126612306066663664620165104165366009340000020
0246002320034026215006064665666205166016011665000
1136001320021021615506253563251606553012566365001010020120
0256001360041114604666450663143556654120416665011010220130
1366002340234015504304350663345546445133460551330
0026002310001321166404544453241245641061456265015120100110
1136002310021 31551615555554151 544411115661  12411100122
1136002330120026512016045565655415651450545600
```

```
1366002330130026635508155165356151166533515555
139604273012102151560565555554656134412165126801311312122
126600253021102331530535215553454335534554346712500302241
112600243001002656300605366426644656533536646
019603253002002650360604656336654016532506056
1256002 200240266006063306630636336603633003641
019603233002003660601606516646631116621605546
01   226100210105146135651455502302311115501660130131201l
029200215031102260610536665155463023401146345501102012011
112600233001000666420605200546262650632604646
09 1  214012001655006605316346550446611603666
019000214011001666010606516356660536613605666
13   126300300266662060646654666606660060166 6
13   325200440465400160545646655155551351355530
029603253013401026660531666306636035603066616
0126004320020036 4 3016065265564511365216053 5
114600272001013621301606636356410016641605356
125600235024002656500606516656625656615501156
114600532031400635440635556555341134532515646
03   326202340266300060615633636666660260466 6
01   226200240111255324555551253506003000600 6
12 3  256030002660000606606066060006600606666
139400248032401664006066663666561006000506566
019602262002034653601605316116434446534602535
019602261002101066650666566601666035003065505502301210020
049602261104413264690415456343466133334335536
039902263004100031550554555635313145204116616801111300013
101   231002002553511615156356635636342511125
019100555002001660500606166336515656615101036
019602261001001550315615626446434046420225136
114600234033011654430605666356333036631556556
139604231004401651211625556155452136531315655
149604332014112033261005514124545463134046626801301012121
01   326201200236340063536666643436311334136
029603262003400661500605616566665016600116666
014600233012001664330606666346060006600606036
029602262002101663410615506646515456616204566600904003001
049604213102021556110606666356451005510516556
114600133012002666500606256356552616600306656
124600231012012666000615656556654556631606665
124600533012003514500515555556511145511514545
039602242012002460650645266306656061516155 6
129601272204132551330336563566363303311335135701201300001
139300214032411551151615556535554135512225555
049602261014000655511665516156651556553605555
115600233012002660600606666666661006605606046
139300247002002650300606556366553115634506166
013600232002112066660566504555054343303055506601300100010
024600232023002666350515115555551533511304555
125600233012101150560564665555556025500055556601311002012
129300216032411663000605666306660446556606366
049602163202001653110515346556533335521515545
```

```
10260023200100065530060636635635211661160216 6
12560023303311046254054466666415500400015663640230132 2
12930020801100264600063654604664003563150665 6
02930020802301065530060641635635311561150566 6
12967023101241166120060651645662112664231555 30
01260023200140234664143553645565333243334554 5 20
12930020800000255631051555644645404442152553 5
01260023300111213566044553562513433513303530350130131101 1
11460023201110105466146553554463534433365510651280131012 2
02920014602200166500160650634666224563360356 6
11920020800100165530160462634643344661351555 6
12660023302210155554043465556545414453234555570150000212 3
04960226200210100066106333633036232323104425813701302231
14 1320001105551003156653653310134112255566002010021211
01 1 2140120026663016001164662655566415016 56
02960226200411200366065565.116114515115155611
12560023201240166531060552664662244664460466 6 62
03940021603240266654060655655665506660034565 6 20
13660023303300364650260560656664404661146564 6
02460023301140256642054555555555401440022553 5 53
02930020803200265730060652635664242664242465 6
13930021503211205546035515320465645111606440680361201003 2
02920021401100215546135525330355546211515450 5
12560023203200326411054556655546433541141553 6
11360013300200366600060663666666003660060666 6
026 1330330026553006 0666366 33236 11606536
02460033401200362600060622644666044665260466
01360023200200355656065651635615111531115552 5
01920021402240225644060555634646413650324563 6 50
11920020801000064631160665626654211661151566 6
01900024401200166631161554635664432663320465 6
12660023203300165541161551615654211652121555 5
13940024803040165600060555634655232661160556 6 5
01910021401200264630160645
11360013301200166650060660603660600666060666
01 2 2140114016662006065063463603255135155 46
02920021401200464630660641632652154664240463 6
01920021503200266660060655615665024661150666 6
01 2 2140120026660606055061464511466415566 6
02460023202410205566036566636363603333106630660130101201 2
13660023303110126663061601635605001550333533680221200213 1
113 1310020033563534456665556533435223342 05
02930020801040462540060555636602030663160546 6 13
113 1320020036660006060660266606666060006 56
00260023100213216066066555502534535521303501640110100201 1
12660023202200266340060653635665605650460635 6
03660013303440366044060066666616100660460506 6 53
11360013200300366542260513644555054541241345 6
1395 24801300255 311615556425423145411215555
14950024800240265510160656635645332651151555 5 60
01960216200000215044064646655665626651424036
10160023100000165600060656636645045662040666 6
```

```
1136002310021112365616565353552333553123553640140000201 1
1496052320121116365515155353653331456115165553013000020 13
0291002450220116662006165666466654466201156 66
0136001320020026660016063263566636666436003 66
116   233020112054450516356545553134413023616601301312012
1393002130310020003106056163661500265106666 66
114   2330010026605006061 6556534346356511145
0126002330020026501116025565561511165145151 56
1296022620011021606214563535156363553330551066013000000 00
1266002320344024534215356525355300450034553523
1192002080210026161006061663564111366146056 66
0199002443000005554236155554566542365322154 36
1136002420101023666603660633603366000306003630140011212 1
0596302710040116634366655555664630463105155 56
0296062530324026603006066063663640166416141 66                5 0
1246002430120026513306063066666065066006063 06
0126001320000036545006045065 66 43616661305356
1136002320121010666606665261366651553000566262003012100 01
0190002140120011564106050563063346661450106 16
1136002320120322661116452065566556263111465 36
0146001330221020664604055163353551553110661066013130120 11
1266002830020016403006050363065650666366000 66
1266002 3002002650311603056436351646426110336
0296022620030014203106054553366245004224155 55
1136002520020006501016043564566546456346131 56
0499022610044106 5 3016054163463533063130466 6                6 0
1386002540324026512016165563465541166115151 56                6 0
0146002720120026504106055656622333663533403 6
1366000320121125535406465263355650355112454368012013020 12
0394002160220005555115155555555551115511515 555
1266002520134026614304356655544521035103361 26                4 1
003   5520021015515315451553546356452111510353009000000 03
1496042520120016604666055663565511166405050 55
1393002560120016300006055263466303166306060 66
03  0226300210216066015556245566612310005601650260001212 0
0394002170110016510006066564666141166106066 66
0196062460010006561106065663463511165324055 6
0296021620131022644406450553154353411131534255003011120 11
1136002410030024563515165163655410155222266 46
0192002080010026664006066564563610146116056 66
0393005240024026666006064665463664466016056 16                5 3
1394001080224026563006056563664521166000156 66                6 0
0496022640020045513215155553554551355212253 5
1292002150120026653006044063566605466056066 66
1146002320100036660006066664566600366336036 66
1156002320320036514116054264565514166105045 56
1136002320021120566506356663564531641011666163 0101002012 00
1292002080320046660006065663665511466115256 36
0192002080120026663006162163264515456422646 66
1116002330004316665605455551551 3   40  24646                1 2
0026002310014122563466456665435530343000355 36                1 0
1293002080010026663016064563565531266423046 66
```

```
1136002330121121553505555554442441244103561266011110000001
029300216031012665410615365555262545503214226
1126002310021121451635545256541443343231444064012131100 12
029200215032002666100606506166521016611606656
013600233011101046310566605535026034041563004011311300012
029300214032401652001616206106423566626204336                33
126600143032013664610616666666556066610535566
014600233013403666100605556016610016611506666                10
029603132002002656603601556556650120611506656
114600232013003256431331406345455345344232625
029400216032000653300605516556514116631505655
013600231002412120640635566656226134101065 10                02
025600233033402314330626636536525446511205545                60
039605216002402010300606566656635156615600600                60
125600132020002664500606666666646556640605555
129300208032002646111616166366521656621505666
101600232001030556401515615355551155521526355
139300214002401655431515555355531111511551555 56            61
039902562002120031600105345505656503130565306802201311012
139500208013101555551355515555151113511155535811201302133
124600 330130036163016053160066063366536036 56
119200208001000666001663160666 50326622204656
04  32261012411655551616666376550011511506 55               63
125600232032002665100606466366660355601605666
029602163002004660000603666666665006600606056
12   223200211206550060656666660606610606660601501312111133
029200208032404656401606556436553146631606656               63
019200208012002656100606606366010016650606666
1192  208002400666100605526346664245635515656               40
129200208002000666106606666336326430513606666
129500208032401644100615556355332115631215535               60
1496 325301311023021065455534533423441212443581330000211 2
019603263002001650111606616166654006510506136
02990226200300166 500606616336635336116603 3
029604152023102050550435563543355463304065136802202302130
059602261004000655600605566366555446601505550
12 1  246002400266640606666666665006400006666 3
112600231002402526141515555435151124533415125               11
112600232002101155460154655325155144311155515201911303010
013   431002131151340425555545031131511215135601900100011
129300248010002653000606556466510116613506656
014600232012401666210606256566261316610504656               33
039601262202003660000605356306333546605302056
019000244011002656200605555366540015511305566
029602261002010353530625666366665006600645546
059604 140041006361206056563665550056305165558 090400301102
01 100415012004666200606646466164056600606666
019000214012402606600606666666604006640606666 40
 2920 2    20  555  06 5  6455451       12555
03 5  208012410155551555555553551015310155535               60
124600243012012354421545535335433334433334544
013600232003102150510515415115555455313135515501202002 0 12
```

```
14   127200240366 0106055263663631366116055350
0146002320101012345404646234440230344342360365012003022210
1393002260104022565504555561332551141311555150
0190001140110326664106152163555204565135046560
1291002140124026561016064561665511166316055660
146  123220010305 661166514511555551111565405824701310121
0291004150120036663101055663161616566040066660
0292001160110026562406041565162524355155025460
1136002330120016563006065064565331105313053350
13 4  246022002655400606336350342546513502556
1293002080000006663006065663464626665055166660
0136002330120126160006060663466266666262656500
1290002140124323363116252563263534463222226360
1192002080200016561006066663563601266016056660
0596  273304020635100605666456432005500506666
15 5  274304404655311615555466553116511515556600
0126002320020021554255251551454525441314244550
0290002140000016463106065163561311366110656660
0190002140114026661006055563561511566216056660
1146002320130016263360060563064226363166036660
1136002330130016666006066161066666666006046460
01 2  214021012666305606526446551446645604660
0191002140120026264236062261465115366354146560
0192002140124016664606054463463614466216056464000
1126002310110022112415254565354113355233245360
0246002320110016633606063565554551155116131350
1295002480010026651616065263466641166115055550
129300248012002646501606450
1136002310020026505115044565566511155126051460
1026  232002012656500605566356351116511505556600
114   433013000665540645466466060446604604366000
1393002150021013623503565646333633333361344358011121020120
0496032310244016631616054665064116666060046660000
0296032330031010615602554646533664130000665067022003020210
0399952550320012503305355565555551153113355350
0196022330020014402105155563454311443322254250
1296012610020015513061541635614022662120542500
0396022620024212665506255563466544665042351460000
0190002140111015564505445554555511155115456553009342301000
0246002320120026265504455463555031135014456150
0191002440110026553106055163565512166115164560
14  6 173024102224150512605555000065500516656801101002011000
0296   730041032553603330533 5353  333 21  3560091  03000000
03   226100211306066056166556535505330405550670140000202200
1146002310131020205605153656330333330330433066011323000120
1190002140214016465106165165655413350035036450000
1199002633000006600006066660566650165106050560
0292  214012001666500606466366563116600605666000
0136001310121011506606553666560326651030536165009020020020
1293002080020025565106152264466525555154246560
1136002330021322564305252653551231452131225365020010020320
1192004030000006563006053563365543306035046560
```

```
14   223200410205555115550240565665115401550681370101013O
013600233012003666600606466366663016610606166
1495  208012400626301606536366322330333306666              63
119200348000400655160605516266250035610506556              51
059600243300100661120615556365151015511515255801034003012
04 6 027430340265551151555 6 55554 2552 415445             30
049600274301000666000606666166600066006606666
049600272302400655101666556166651236611505666              30
113600232012102556410516666156150115211415636501201000011
129200245021412555651545455414425555116155515              31
113600533012002566511646426546665445634246646
039900162332112450660253513313355533311146515712202011313
1146  432013003616601606406516610624623506656
019000414011003556110616566425151355501335546
119200208002004646501606555356635156631606656
136   133022002656500615516556655155511505556
03 3  216002400666300606166016620330604606666              32
025560232012101250220345365335353333303243221601300200001
019000214010004645200605505356544036532505655
149606256014400560510605466346234335514516555              61
126600033034002666111616666366460006600515656
139500258031400661406666610466421005620506466              60
049603251004001651511 51655635402651030536 5
029300216002000665000606666355660016511606666
001600131002002546440645516455441115511515546
111600231001132255440645566435154135213235525201131200011
119200208012000656400606555265445444144055 6
029300248010412656410604666556640016601315646              40
029603234002002656401605526456554246642605546
029200216032002656400606626456552036613505656
139300248011400535516615555656533215531235556              30
029000214000000655304605456456541236634304656
119200208002002636303506636346530035535515656
12 4002 503310266106031566554515000350061646670010020211 1
13 3  208020001655300606466566151116601504666
0596002 730140166140060656656656101551650515 6              40
029100246010002646402616606356522016641205556
129300208021003656200606646456461556601506656
019603231002400335436616436356333436334315435 1
029604213002000666300616656356650016610305666
1293  208010002655311616656356352616621566656
129200213002203666100605416346451446612605656700 0030 2
039603261002400663011515555355333555511515555              61
039904213002110456263426535334233132333223646800 0  00001
14960830801 4006565106066 6366560016600116666              60
039605215012000635560636536336335516633305436
149603554003001633306666606466666356641666616
039604261004410660410515566356451225512 1 045              60
029600261300404600300600566356331326434305136              60
149500508003101555030515555355353005300335155800100002132
14  5 151004102033550366563603036663636055506701313311000
129300208012004136435645506346543335453315645
```

```
02   2161002112553410616116315411555515514655500301102122
05   2261013402642501605306526623656614606066                61
029300208031003656310606516456561016610606666
119200214022002156161166652453011011112055606
049602262004113156661555505423555454153165516801310202012
049602262002013651501605256556656336613565165
029300426902402656441615426556652430622205446               50
039602112014413656211615506356655045631565555               5
039300224002102456351366552535021141014045406702110300020
129605247002401633003605336366330306633605366               60
029603153002001651610605456646543445631404145
029603152002011550011614555555565534553151  44
126600254002110254626344455542352033423444135702701302020
059600261304004631003604566356353036633606166
029400116002002646506666456556610036611004666
05    2  30400435 341636666366353030531335355
11 000432001003625320606666456340053 0 06656
001600131001103225550634215445414335511442635100001002002
102   2320024221566606666666566365066301066646               02
129300208032002646100606666356546005600306 64
01 00 214012011166310616456556505561344225555
129200208010403616001605256026620436613002666 60
049604213112401655111515555355151135611565                  61
029300208012401656061606646066640006630606566
013600132002400622351616106326452536644510166 33
113   2320020030016106000363066366663363011 06
019000214012402655301605556456550336611514565 60
129500208030400650260606666466553006600506646              33
129300225003201666600614256356554555612514656801500012123
159600271303402 44 31 356653 63463 31   3 6 36              62
139500208030002641100605056366320116030606400
112600143000402640464604566566663046641306066              02
139500208032402644410 4 161655544311461052555 5             50
139500208034002653301616656456521115621506666
113600334012001516601615306336511556351563436
049603263002400100550656556335666335333065335              53
139903232012111665036 60 666366360006630636536801100002012
129100246001111155330315513355533313311175535600101000002
039603262002114 03 663366153313535653135065106804 01012242
129400208033000655500506566655655113561150 656
129300208012001646300606566366651016611605656
129200208011001626413605115346321555641503656
029603232012001556501655656346551035531515655
049902261001021663206606566566454216612605266
024600134012400355650 4 524554545 333 24133226             2
149660271004404155555555555505355501511105514 4            60
1395  208022000535420606665344433344432525655
029300208010004655314415525345352334342415435
119200208012002666411605556556454446611215636
139500208032012255450415556555443114411245635
029100215002402666306616616346351116511506666              53
129100223012113136460546136325424534033124536601911002012
```

```
1495002080124014564311153263551514053111156361                31
0296042320140116661006064363466651466116366661
1292002080111115564005066163565510355334156562009341000021
0296042130014012566606356663265550665102366360
0496044150020026405606161264464216465155020561
00160023100100265 221625556455554115611515115
1136002310121110505603635531325163541350551065126020101211
1256002340130026636006065160666501166116053651
0296002613310006303306055663565350353133133551
0192002150124026565006065665566503366235156561               30
1394002570300006600006000662646403003606160661
0296022610030026500016042363266504606026010651
1256002520214005315116155565664340165313163561               61
04   31 3003004550311526635556355035511556535
0190001140010026664006055663465601565036056561
0296042142010016663066066063660630366106066661
0191002140120026564056066066465304061256666610
113   232000102106630465 606540000040000366065023003021301
1126005320020025666006336063666420063400046361
1192004080024026563166165666665100156111656661O
12 2  208030002636321636316336333236343335636
1156001330130016655106156262665500116135155561
1286002540331125515115155555555440044004461368023010021321
1496002733024145536136166153655350055112134533               33
1292002150200026561156055161564511365231146551
0396032520120116610016066563666540566135351561
04   226100311215566033663555453043336216535801101012010
1496042700044006640006055260664510166105066651               61
03   225200411203366036656361303666363605550680131331100O
04960226100 0  3 2  0656 5534  551         1
1246002330321015564404431255444446533232426555003122020033
0136001330020026664404252603155514566343255451
125   53301241 44522152425654634233512544244520               20
1136004310034026406046064466666464466440416652               53
0596002633000016502006066666663500366306060661
1596002713020006633006066663665630066406066661
0266002330121030505506666263353403500006601166123000121291
 1390050800300266150161655615645154452250555511
1136002310124036265506262165362113446134055561               41
0190002140121026666105153155455563354132466364012123100101
0190003140000046361006066363665310366306056661
1191002140120026560006065560566402366116064261
0190002140100026565006055555564511155113154551
0 960 21 104402566 656555465565533 653 505555                63
0126002310036456456046053460566533566343060661
1293002080100015515016155563564521155314155551
1293002360320026516116065663566504455143055561
0399042340030016036006066660666044666246055661
0146002330030126525016055364455220455455051661
12 2  246032001663510615556456252116411525556661
1394  246031002651311525526355551115511315555561
1394002470324036415006053366366455366335035561               40
```

```
113600232012013666140616436316555356505515536
029200216012403554116154364554523255134156453 0
129200246012111556130615566545441435514315556600914003011
113600233012001656100615506466620316600406645
022 00116002402665000600446306555665634505356 33
02 2  21402240236665044531163544445550124454 6 03
013600233000001655001605556446552666622004566
013600232001102666110636666566051136603336605501201102112
019100214012001666300606666636661001661030665 6
129200208031002656 0 460650643641034663060563 6
112600234000102031300536666565545214333264641640000020001 1
012600231001412054360466504344153252334055526 53
001600231002033526610516606456513436630136635
114600233002404556311614456356554116532305435 53
029600261302002630630636616366630030543006066
013600133011003651311616556356434436512305466
129200247020400641110625566355244016501615246 51
012600231002002334332625066343534435435300036
002600231002032556151525456555454345521334155
03  5661002012553431615536356633335613213325
126600233013001666500606516566551046610206666
13 5  208012001665100606550366451016611605565
149605257011401551101515455355551325512414455 40
029200208010002655311615346346241325622314535
139400208030401645212606616346451015651426566 63
139400208030401645212606616346451016651426566
136600233032002664530555356355554545333131135
129300248012002616101615506346511116532405555
127600132013401654400615656666664016640506646 41
039992232003400656530606526656634146614605526 50
013600231011113556040625605666321336033116666600100302001
149680270034403666432602610156300016620506666 5
149500248032402664300605556466460016611605466 50
049603233104001666501602636356353335511515 5
127600235023000666300605166036063536631602666
101600331001002556611616446555654436552405656
029200246001000666300606166346333546536504156
129200425012410666400606626336651346610226656 60
113600232002401255440444355335555344112245526 00
139300245002000666300666226045553146603603366
139400248012006564016154463565540165315054 6 6
114600271002003660660604406646660306662666666
113600232002412256664666306666666600311113562 33
049602262004114154550515155535453545234115525801934003012
129200208022402556410605246455554545514412655 50
137600234030001646400603566556541016600615666
113600241001401656111665556356345356631605566 43
049604214 124116660006066063666600665506056666 63
102600232001001656311615516356451326441514536
114600232011001566630655566655433006430335459
012600233001001656100605666466250006500506666
129100215012402666301606516356561116615505656 40
```

```
1026002410011020513634663535110323630330643551004013000011
12460023402140366050060516656646461551131215601
12  7 27501411216033663603633666366366630133680051221211 2
125   27303140362110060642655662543562221552553
113   23301210324056644551402445534322406530640120101001 1
04   21610030026554006064563064444064116055 6
12920025503240015011061655645665611641044541660
02460023100211203066066566655563633633406603671220110112 1
11460023300200365040160541654655045664350505 6
11460023301210262506060500660662046664300056660101232201 1
12930030803100261660560030605660055605460366
01   22620021022504505443653154333553332253255014000000132
01960326101311305066036555332503655330506501550121000001 1
02760013301210226143053635535515522333424442580030030201 2
01360023201100266630060511636655453660060166 6
03960026430040466130060666646666300663050605 6 60
11360024301140265310150555524654121552151345 6 51
02910024601041365640165560635644401655110555 6 61
026   23201210006066636666350200603300006660670230121101103
02920025601200164310660662635644000662360445 6
02930021603200266601060600632646053660360166 6
112   23200203165001660606666663360660660006 6
11360027200211306060036646662560612401506620631260131012 1
12960026130211215155115551231355565353105510650120201101 1
01920021401200064600060555605654032663350566 6
12920020801000160630060666636630300660000566 6 61
12460015201201256556060666635655531350151555 6
12940024801200266630160655636636111660126656 6
11360013200200255660060100666661461561455043 6
01960027333240254141064555633642313652141514 5 33
05960024230400466630161565636655401651050644 6
024   13201000066634060626666666464060460004 6
12950020802301066640060666646666644660060566 6
0596002 33040006551106056665662611166115054 5 5
01920014800200066633053606530535366533633063 6
01360023200213215644655630554666543055310151630190030201 2
113   23300200061550090266666666663662070566 6
14   52550144116035066046063666000066606066 6 10
0393  21701040262010060562632652106661430664 6 20
11360023200140266610460556635665011661460565 2
04 4  21603240234153043440423554533433232563 5 33
12960226103311201666626666163363603303306660671241230012 2
02   12620034015515036115663563636156316556 5 60
12920022400300265640060555635654111662033563 5
12920022500040255551151555535545411551122555 5 51
01960024330100265660060663656663301633060663 6
12930024801200266600060566656636312660060553 6
01960027430000200260060666666626100660061666 6
01960323200410215634055555553545364311315551560231230002 0
114   23201113355531065641535515251554151145650190000301 3
13961027100210355313053462536513002451056155581230000223 0
00160023100100366466060635636666666661560316 6
```

```
013   342013112445660365505363446333410660265125010122321136002410134133516046350163066566466163201160 33025600232030302413340445664465325133203236426700001200003159500233302402550460503555555551135511115155 00113   333002133046660665356506221565034064406501201102012114600233012103465520345565654434123501245636601201302121126600232033103151650415565555551511420005561670160101211212660023301410303166006666400465666500606640671262201012101960226200200366364061422654665464553234462614960413402410211625051556615423511251150664680220000201102930020803200265610060622636645151661160466603960524600440252640060522601641254563551345615 50152261024402666606605606666664006610606666 6125600134012401561531635656366551006610536156 60042263004113051560566635545656631611655565803222112030192002140000026561106053565362015356155165551920020800200265620160541614642214464430555619600523401300155050060655655655131663130255611360033400300066454004656036656101256151565511920020801100166630060662636666101660051666603960 22 200310203556053505530555666500506530580211201202011920020801200166650560660635665200664060666613 411403440257751061666731039600273301001650303606556066650036513503555039300208002402666415606626456554526612505656 61149600 211041031511503556331333333623360255158131340000322 0 215010411656100605566356426326631505556 30049600242302001665310616516356651006510205556119000244000002656101605536556651016641506655139500208000201555210605556556352115511515535139500208000201555210605556556352115511515535129300248022001656501606666556650006630206656139500208011001655400615556456451116511205555129300248010002636304606106326533336614506036139500248022102155520335465315115353115063516801401010012 14 5 151004102033550366563603036663636044406701313311000112600431001133156660666666445056616311025106100200002001139300256021100661516646606066554106616506156801101002232059604232014100110520455455645535155315025125802311300023 1136002 200200265300460544636622330663560226604960326201440165655061660656656500650050666643 1293002480100046661006065563663600 6611405646039604245003001656401605556456453036520506666019601261002000651010634356116551466534513535 12 4 200334400255522523425315535265132234515 60119200208001004666111615356146661436634612656 13 5 13 200265 0016055505561510006 1565 65023600536013002566500606256666662346631401046114600234013112555610515005435151655325320446501301000010017600253032102560100616216466665416510202016600934030031960026330000253431151566545524411441121614602 02 0 1140000026560606055564664521465115646664
```

```
059608208014401666100505556566655005530415655                60
012600233001111565111515555555251115211215155501102302022
04  002 230400466360360355634655644665460663 5
03   116200201266460060556655665464660600066 6
039603261003000654300606666166654006 00606456
129400248010001666100606566366351015611505566
114   272001400651550605336466655315512533136               0
129200256010402540401615436446515116622414236               60
119200208000001646100616456466443335641614656
029602232004103026161365063515624653016064415701000100011
119200208002002656351604346446553555434425655
029602262002012660300606566366564006600505056
129300208022003656311605156346553666613515636
029601263201002640001604126566433436645502356
129200257031002653600605556356315326611505346
129200257031002653600605556356655326611505346
149605254023102660130505555166462155511115526801300002121
049602261201402651151515515555551115511515555               21
001600251001001225541546055334523534534331545
113600253021001260320555266556555535313325636
013600251021012160350455265446564335300154146
113600232013102136650064064304026660535064626503600010022
112600232002102256610615646346060302303456646301300000011
113600232012003665101625516356531226642505566
12 3  208001004616600606666336612136613606666
124600231003213334233636336332534232464353336600200300002
019200214013103556211505266216442446614525656101101002011
113600133002013426350346465656540443601525656
139400208002401666200606656356240015510305666               60
115600233032000664520606616066464016600306666
014600232023112256460455206335166453115026616301100002012
049604213201002656601606416466640556626404626
126600231011001664400606556456151515511504536
129400208012001666100106206446551155511515 65
039604213003101066560606666636663566300066606600210200002
137600253002011653500506666066060000550050655
019604213201411566336635606436464036302326636               00
139500448000411550200605545466564116600106156               60
049600242304001655111605656356540036632605556
124600231012412655550616456156651416611605656               63
114600232012103136660556605523526455305064606401700010011
013600232002402456540605556546541335423256536               31
0596002 130400265451151551635655121551151533 4
129300208012003651215605556136453126632505435
013600233012002666434534543333333333333333333
124600231023112035560365114005054563024061606401111002011
129400208011102666410615115555451414511514656700101202113
129300208012402666311615326346442365545526656               31
126600232022102432530432225134335133313143545701101002011 53
139650273003102000650665666036066666606016006801800012013
019602261002111150660565566555656543103055016512201312122
119200208012002655101605516356554016632505556
```

```
1192002080021025555314255555555342325115255554021010021 21
019100 1401200366651061651665531136631331513 6
0190002140100026463106066163552210065403066 46
1136002320010016563006051063165534366235106 56
04    2 13 441165 555645666365554030031506345          63
1192002450120025503016054563564334155125260 56
05    2 23 440065  556256262665543306313063 45          63
1136002320120022455605664664322533653012556 16
1293002080320016551106163163465416565115126 56
1293002240020016463006066563566504166105066 56
0236001320130126553016051562265516465435046 46
1192002480000006563016054063464332263344045 36
1136002320020336563306165163566335555126036 26
0496002723000026643006066663663601366016064 66
1292002580110011605303354661346664444011456 16
0292002140124015665106164063566613466116146 56          63
1146000320130120063125254165165004453112246 56
1146002320020020650005063555046566633160516 06
0246001340214025664106155165564511164112452 4653
1496102730024121315515555453551541551131511 55          20
0296022743010026613016052263564503166235041 65
1292002150110026662126055264552511455325155 56
0196022620011100506603655141314260632311451 26500934000002
0496022620024016505406155566665444164212150 46          51
0296042 600100155121361551635643111553151634 5
0146002530024021206505455655455443353231551 26          30
0146002500124032006606663563366163360000660 0631
1136002520020026 40 00606006 56544646534300546
0266002310321130661666636155356566353566656157010100020 21
1256005330121022611106566664665640043002460567014013121 21
1393002150310036654006064063666602661160666 6
1136002320000136565106156565365550265143150
1136002320024136164356156163464320455613156 36          33
1136002310030030066616065064166015661440656 06
03   42130040002002100155161555140551511055 4
1292002150204026561001066663663500066006066 66          00
1136001530020006401306065663365511366036045 36
1393002080000006363006061063466145466413026 56
1293  246012000653301615556356533416613505 35
0192002140130016663006066363555513355133155 55
1136002310230016564216053264666443365235255 25
1192002080004006664006065063564413566446046 46          31
0293902160310016263606061164566026555433226 46
1136661320020036561026155463300403466425055 46
0136002330020036560026065163466501466425066 56
1293002080010025662111161665355546565042116 46
0396 42142024026663606053665563603566035036 66          30
1395002080004016564016152364666214466135055 66          60
1293002080000046561016154564361523465114065 5
1136002320121332266015565354246344656341456361111013221 11
126   2340340130355603655631135363331131655 66
1026002310111130166503663536000363636060663062112002110 13
```

```
029602261004102060561435024205546333401045116801101112010
139300208002401665410616516566463656601535556              10
13   223200410366542060355605555545555450465580093400301 2
126600234032003645520605426356620416611305136
113   432012403666000606666636666060660460 66              01
113600232012403656101605446426530446622505656              40
136600232021411653313615155345533336533513555              60
013600231002130266550455516636454443003346615501302300011
049604212004402656450516156135651561615503656              60
039602262004002653404605166536544266336601256
019900141300002663403636566566635036535615336
014   233010103164460665425444554144311045406601100310001
124600233002003646062605426536142336663504665
000600232000002255420534525255252135431125445300100002011
139602263002102161560525255525655155311064516803400312141
124600233013102052540555155216422654206040116812700012122
119200208012002666415616606356351036423415645
019200255012001661503606606556565015540515136
039400146012101660440505655365254114611415455800 90  23111
136600236001322636330626666355434036633335626
029604214113013666400606566566150046600505656
123600233022113066450645356045556444432066406501311022013
002600232000003655201615326356353256645303433
119100214011001666000606626666660026600605666
019603262013001653543605366356651336601315355
126   132031402655111515555555651111511666655
029920141003402336330535066343333331513333055              63
125600241010102665160646606666060606605644366701202002002
029602261000002661401005356556454546514604156
129200508002000656501606516356024066640605656
039604213004001656101605556456555416631605666
129300214032002665200600126436446646435605635
049603252003401260460626640366151126410025226              63
13 4  216032412551340544165555555534514414555              63
114600232012002656440016556446523326532414656
029300246031002661100606626466463000600666466
039600213331402656300606616566550006630006666              60
129300208013001556300516556556432114511515656
137600253013402651440606506466651006610515556              12
049603261022021650500605516666655066555505455
044  42510140216555166 363355666600563336655 6
029100114013102256451555355134353334313253335501100002011
112600232001132466340545465553344514510446646401301102112
019100215022003166340625566516565156301245616
112600272002001650110616226356553436664503056
125600432022001536311615526325333165533315535
013600142002013664506605036546643066643620566
159609208034002655101605556556645115551505555
112600253002410433340624426334525335323242016              03
129300208011000666500606006006450656656601666
129200208010000646300606566356442555512505656
029604214012102156150546565315153165314125645401400002131
```

```
1291002140124016665415155065551510045515466561                21
0296022520114112666603666066134340244643451061                53
1296702320024026036006066066366000066603066361                50
1386002330300026512006055563662521166106064661
1026042330000025442406265663451341452221344361
0190002140011000666006055566466660461040465364011112100111
1292002080210006660006066663465606666156066661
1293002080120006542015064361265126656414045551
0136002320021030646605564656466663451036336065113013101111
0291002140220024565506451166055516565152136461
0191002140320036665056155065566241466515155561
1136002710121032615106446465555553454110453264003013100011
1146002330130014513115244465264565554142441161
1136002320024036154116055664566144166105156661                40
1393002140314026663006066265665510066105166661                63
0249902520101121505501565514436463332232653166127013102221
0190002140110016651106064163465304556415056661
03 5  216032001554 1061541655515044551151555551
0196042320124125564205465165556542246421466561                00
1396041140124026663006065063566221106116055561                40
0291002140020026563116061163452211355315165551
0396021320040026544446066460666400066406606061
1146002320312016664106465064565550566404166261
0190002140114032564555464463666444560324156141           0 01
0136002510020016544016166665561520065014060561
124   1330110125563206163565561404163126144361
1146002330011111661366356666350510351110166366027013010131
13   2262004002544301615256346523456634201455
0396051330040225503006066663665541066046066461
1236001330121121660606560464050216163333666365001000000001
03   4013012113466450535206415365555304145606502211102023
0296042141024106564016064664564515465443145561                53
0493002160121001606403566451351631345110561168023110022301
1136002510024315505315354555554553555115555151                01
0393002140321015654105454656551533355034555308022013000211
0396022620020013534306465551653446551133341561
1246002310131125561153255531355540444043555455125000001211
1136000330120036361156354151356303315333156451
0596002 130400 65 3106066364564531356306556561
0196002643004005302114155554555341145312151351                61
04950021603240066 1 006066060660000166106066661                63
0296042520030016603016066663666660066006060361
0136002310011023654405335554453333452140353255011110020121
0  0  2140114036261016060163465126566130036561                50
1596002723000046555116156155665511166115155561
1126002430024135303205241053254155653565405261                43
1146001360020046660006066063266606466136056661
1293002130021101566206166656461456643010156468013003021231
0236022630020005333406155564555510165313144551
0199022620014022053506456363566341663330364561                11
0496052160144006563306066161665500566036066661                13
1496031310144004561 10515565554464445611415535                63
```

```
029604213000402256510545666655552045001126606 51
02   216400310155115155546555515111551153115580130030212133
114600252002002663420666646646424036300206456
149605233034422666510513576554455013511531355                63
129000214010404666300606526356363016611515666                00
129200225002001656310616 53
```

Appendix D: Response Frequencies By Item

Q1 SEX

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
FEMALE	1	403	45.5	45.7	45.7
MALE	2	479	54.1	54.3	100.0
	.	4	.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 882 MISSING CASES 4

- -

Q2 AGE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
20 OR LESS	1	29	3.3	3.3	3.3
21-30	2	322	36.3	36.4	39.7
31-40	3	292	33.0	33.0	72.7
41-50	4	130	14.7	14.7	87.4
51-60	5	84	9.5	9.5	96.9
61 OR MORE	6	26	2.9	2.9	99.9
	10	1	.1	.1	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

Q3 ENL_GRD

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
E-1	1	2	.2	.2	.2
E-2	2	15	1.7	1.8	2.1
E-3	3	50	5.6	6.2	8.3
E-4	4	113	12.8	13.9	22.2
E-5	5	76	8.6	9.4	31.6
E-6	6	29	3.3	3.6	35.1
E-7	7	36	4.1	4.4	39.6
E-8	8	6	.7	.7	40.3
E-9	9	4	.5	.5	40.8
NA	10	480	54.2	59.2	100.0
	.	75	8.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 811 MISSING CASES 75

- -

Q4 OFF_GRD

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
O-1	1	33	3.7	4.1	4.1
O-2	2	35	4.0	4.3	8.4
O-3	3	98	11.1	12.2	20.6
O-4	4	80	9.0	9.9	30.5
O-5	5	28	3.2	3.5	34.0
O-6	6	29	3.3	3.6	37.6
NA	7	484	54.6	60.0	97.6
	10	19	2.1	2.4	100.0
	.	80	9.0	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 806 MISSING CASES 80

Q5 WG_GRD

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NA	1	751	84.8	97.2	97.2
WG-2	2	2	.2	.3	97.4
WG-3	3	1	.1	.1	97.5
WG-4	4	1	.1	.1	97.7
WG-5	5	1	.1	.1	97.8
WG-6, WG-7	6	5	.6	.6	98.4
WG-8, WG-9	7	3	.3	.4	98.8
WG-10, WG-11	8	3	.3	.4	99.2
WS-8 .	9	1	.1	.1	99.4
	10	5	.6	.6	100.0
	.	113	12.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 773 MISSING CASES 113

- -

Q6 GS_GRD

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NA	1	610	68.8	76.0	76.0
GS-2, GS-3	2	10	1.1	1.2	77.2
GS-4, GS-5	3	74	8.4	9.2	86.4
GS-6, GS-7	4	38	4.3	4.7	91.2
GS-8, GS-9, GS-10	5	46	5.2	5.7	96.9
GS-11	6	16	1.8	2.0	98.9
GS-12	7	5	.6	.6	99.5
GM-14	9	2	.2	.2	99.8
GM-15	10	2	.2	.2	100.0
	.	83	9.4	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 803 MISSING CASES 83

Q7 RACE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
AMERICAN INDIAN	1	10	1.1	1.1	1.1
BLACK	2	93	10.5	10.6	11.7
CAUCASIAN	3	727	82.1	82.8	94.5
ASIAN	4	11	1.2	1.3	95.8
HISPANIC	5	18	2.0	2.1	97.8
OTHER	6	18	2.0	2.1	99.9
	7	1	.1	.1	100.0
	.	8	.9	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 878 MISSING CASES 8

- -

Q8 POSITIO

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
PHYSICIAN	1	108	12.2	12.5	12.5
NURSE	2	142	16.0	16.4	28.9
PHYS ASST, NURSE PRA	3	13	1.5	1.5	30.4
TECHNICAN	4	313	35.3	36.2	66.7
OTHER STAFF	5	85	9.6	9.8	76.5
ADMIN	6	73	8.2	8.4	85.0
SECRETARIAL	7	92	10.4	10.6	95.6
SUPPORT	8	37	4.2	4.3	99.9
	9	1	.1	.1	100.0
	.	22	2.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 864 MISSING CASES 22

Q9 EDUCAT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
SOME HS	1	4	.5	.5	.5
HS GRAD	2	123	13.9	13.9	14.4
SOME COLLEGE	3	215	24.3	24.3	38.7
>2 YEARS COLL	4	165	18.6	18.7	57.4
COLL GRAD	5	127	14.3	14.4	71.8
GRAD WORK	6	44	5.0	5.0	76.8
MASTERS	7	56	6.3	6.3	83.1
GRAD WORK > MASTERS	8	14	1.6	1.6	84.7
DOCTORATE	9	135	15.2	15.3	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

- -

Q10 FULL_T

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
FULL-TIME	1	813	91.8	92.0	92.0
PART-TIME	2	9	1.0	1.0	93.0
TEMP	3	12	1.4	1.4	94.3
VOLUNTEER	4	48	5.4	5.4	99.8
	10	2	.2	.2	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

Q11 SUPERVI

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO	1	413	46.6	46.9	46.9
5 OR LESS	2	293	33.1	33.3	80.1
6-10	3	71	8.0	8.1	88.2
11 OR MORE	4	104	11.7	11.8	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 881 MISSING CASES 5

- -

Q12 TIME

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
AFTER 1 JUL 88	1	115	13.0	13.0	13.0
1 JUL 87 - 1 JUL 88	2	156	17.6	17.7	30.7
5 YEARS OR LESS	3	414	46.7	46.9	77.6
5-10 YEARS	4	112	12.6	12.7	90.3
>10 YEARS	5	86	9.7	9.7	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

Q13 SMOKER

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NEVER SMOKED	1	458	51.7	51.7	51.7
CIGARETTE	2	191	21.6	21.6	73.3
PIPE	3	7	.8	.8	74.0
CIGAR	4	5	.6	.6	74.6
EX-SMOKER	5	224	25.3	25.3	99.9
	7	1	.1	.1	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

- -

Q14 LIVE_W

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO	1	700	79.0	79.1	79.1
SPOUSE	2	141	15.9	15.9	95.0
CHILD	3	11	1.2	1.2	96.3
OTHER	4	32	3.6	3.6	99.9
	5	1	.1	.1	100.0
	.	1	.1	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 885 MISSING CASES 1

Q15 WORK_W

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	1	123	13.9	13.9	13.9
1-2	2	228	25.7	25.8	39.8
A FEW	3	375	42.3	42.5	82.2
A LOT	4	123	13.9	13.9	96.1
DO NOT KNOW	5	33	3.7	3.7	99.9
	6	1	.1	.1	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

- -

Q16 POLICY APPROPRIATE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	68	7.7	7.7	7.7
DISAGREE	2	72	8.1	8.1	15.8
SLIGHTLY DISAGREE	3	57	6.4	6.4	22.2
NEITHER AGREE OR DIS	4	26	2.9	2.9	25.2
SLIGHTLY AGREE	5	35	4.0	4.0	29.1
AGREE	6	108	12.2	12.2	41.3
STRONGLEY AGREE	7	520	58.7	58.7	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

Q17 ADEQUATELY PUBLICIZED

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	18	2.0	2.0	2.0
DISAGREE	2	24	2.7	2.7	4.7
SLIGHTLY DISAGREE	3	28	3.2	3.2	7.9
NEITHER AGREE OR DIS	4	65	7.3	7.3	15.2
SLIGHTLY AGREE	5	65	7.3	7.3	22.6
AGREE	6	375	42.3	42.3	64.9
STRONGLEY AGREE	7	311	35.1	35.1	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

- -

Q18 INVOLVED W PATIENT CARE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	135	15.2	15.5	15.5
DISAGREE	2	91	10.3	10.4	25.9
SLIGHTLY DISAGREE	3	11	1.2	1.3	27.1
NEITHER AGREE OR DIS	4	59	6.7	6.8	33.9
SLIGHTLY AGREE	5	53	6.0	6.1	40.0
AGREE	6	140	15.8	16.0	56.0
STRONGLEY AGREE	7	383	43.2	43.9	99.9
	8	1	.1	.1	100.0
	.	13	1.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 873 MISSING CASES 13

Q19 HARD FOR SMKR TO WRK @ BEST W/O CIG

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	77	8.7	8.8	8.8
DISAGREE	2	106	12.0	12.1	20.8
SLIGHTLY DISAGREE	3	52	5.9	5.9	26.7
NEITHER AGREE OR DIS	4	195	22.0	22.2	48.9
SLIGHTLY AGREE	5	152	17.2	17.3	66.2
AGREE	6	174	19.6	19.8	86.0
STRONGLEY AGREE	7	123	13.9	14.0	100.0
	.	7	.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 879 MISSING CASES 7

- -

Q20 N-SMKRS HAVE NO RT TO FORCE POLICY

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	351	39.6	39.7	39.7
DISAGREE	2	168	19.0	19.0	58.7
SLIGHTLY DISAGREE	3	41	4.6	4.6	63.3
NEITHER AGREE OR DIS	4	66	7.4	7.5	70.8
SLIGHTLY AGREE	5	63	7.1	7.1	77.9
AGREE	6	74	8.4	8.4	86.3
STRONGLEY AGREE	7	120	13.5	13.6	99.9
	10	1	.1	.1	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

Q21 NOT ENFORCED

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	553	62.4	62.6	62.6
DISAGREE	2	214	24.2	24.2	86.8
SLIGHTLY DISAGREE	3	16	1.8	1.8	88.6
NEITHER AGREE OR DIS	4	27	3.0	3.1	91.6
SLIGHTLY AGREE	5	15	1.7	1.7	93.3
AGREE	6	21	2.4	2.4	95.7
STRONGLEY AGREE	7	38	4.3	4.3	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

- -

Q22 SMOKE HARMS SMKRS & N-SMKRS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	9	1.0	1.0	1.0
DISAGREE	2	12	1.4	1.4	2.4
SLIGHTLY DISAGREE	3	7	.8	.8	3.2
NEITHER AGREE OR DIS	4	48	5.4	5.4	8.6
SLIGHTLY AGREE	5	45	5.1	5.1	13.7
AGREE	6	147	16.6	16.6	30.3
STRONGLEY AGREE	7	613	69.2	69.3	99.7
	9	1	.1	.1	99.8
	10	2	.2	.2	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

Q23 RESTRICT. POLICIES UNFR

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	405	45.7	46.0	46.0
DISAGREE	2	180	20.3	20.4	66.4
SLIGHTLY DISAGREE	3	38	4.3	4.3	70.7
NEITHER AGREE OR DIS	4	59	6.7	6.7	77.4
SLIGHTLY AGREE	5	69	7.8	7.8	85.2
AGREE	6	56	6.3	6.4	91.6
STRONGLEY AGREE	7	74	8.4	8.4	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 881 MISSING CASES 5

- -

Q24 AM IN GOOD-EX HEALTH

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	9	1.0	1.0	1.0
DISAGREE	2	7	.8	.8	1.8
SLIGHTLY DISAGREE	3	7	.8	.8	2.6
NEITHER AGREE OR DIS	4	27	3.0	3.1	5.7
SLIGHTLY AGREE	5	51	5.8	5.8	11.4
AGREE	6	395	44.6	44.7	56.1
STRONGLEY AGREE	7	388	43.8	43.9	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

113 Aug 89 Frequencies Of Survey#1 Clean Data Using SPSSX
14:04:16 AFIT VAX/785 UNIX BSD 4.3

Q25 AM SATIS. W MY JOB

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	43	4.9	4.9	4.9
DISAGREE	2	53	6.0	6.0	10.9
SLIGHTLY DISAGREE	3	45	5.1	5.1	16.0
NEITHER AGREE OR DIS	4	74	8.4	8.4	24.3
SLIGHTLY AGREE	5	110	12.4	12.4	36.8
AGREE	6	332	37.5	37.6	74.3
STRONGLEY AGREE	7	227	25.6	25.7	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

- -

Q26 HAVE NOT OBS VIOLATIONS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	98	11.1	11.1	11.1
DISAGREE	2	120	13.5	13.6	24.7
SLIGHTLY DISAGREE	3	71	8.0	8.0	32.7
NEITHER AGREE OR DIS	4	52	5.9	5.9	38.6
SLIGHTLY AGREE	5	40	4.5	4.5	43.1
AGREE	6	250	28.2	28.3	71.5
STRONGLEY AGREE	7	251	28.3	28.4	99.9
	8	1	.1	.1	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

Q27 SMK IS HARMFUL TO HEALTH

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	10	1.1	1.1	1.1
DISAGREE	2	3	.3	.3	1.5
SLIGHTLY DISAGREE	3	6	.7	.7	2.1
NEITHER AGREE OR DIS	4	36	4.1	4.1	6.2
SLIGHTLY AGREE	5	20	2.3	2.3	8.5
AGREE	6	154	17.4	17.4	25.8
STRONGLEY AGREE	7	656	74.0	74.0	99.9
	8	1	.1	.1	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

- -

Q28 SMKRS NOW DEV NEW RELATIONS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	42	4.7	4.8	4.8
DISAGREE	2	55	6.2	6.2	11.0
SLIGHTLY DISAGREE	3	15	1.7	1.7	12.7
NEITHER AGREE OR DIS	4	352	39.7	39.9	52.5
SLIGHTLY AGREE	5	119	13.4	13.5	66.0
AGREE	6	208	23.5	23.6	89.6
STRONGLEY AGREE	7	92	10.4	10.4	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

Q29 ORG INTERESTED IN PEOPLE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	39	4.4	4.4	4.4
DISAGREE	2	42	4.7	4.7	9.2
SLIGHTLY DISAGREE	3	44	5.0	5.0	14.1
NEITHER AGREE OR DIS	4	99	11.2	11.2	25.3
SLIGHTLY AGREE	5	131	14.8	14.8	40.1
AGREE	6	314	35.4	35.5	75.6
STRONGLEY AGREE	7	216	24.4	24.4	100.0
	.	1	.1	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 885 MISSING CASES 1

- -

Q30 N-SMKRS HAVE RT TO SMK FREE ENV

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	5	.6	.6	.6
DISAGREE	2	7	.8	.8	1.4
SLIGHTLY DISAGREE	3	8	.9	.9	2.3
NEITHER AGREE OR DIS	4	40	4.5	4.5	6.8
SLIGHTLY AGREE	5	40	4.5	4.5	11.3
AGREE	6	208	23.5	23.5	34.8
STRONGLEY AGREE	7	578	65.2	65.2	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

Q31 PROD SUFFERS FR BREAKS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	48	5.4	5.4	5.4
DISAGREE	2	62	7.0	7.0	12.5
SLIGHTLY DISAGREE	3	40	4.5	4.5	17.0
NEITHER AGREE OR DIS	4	111	12.5	12.6	29.6
SLIGHTLY AGREE	5	161	18.2	18.2	47.8
AGREE	6	230	26.0	26.0	73.8
STRONGLEY AGREE	7	231	26.1	26.2	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

- -

Q32 ADEQUATELY PUB FOR PATS & VIS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	24	2.7	2.7	2.7
DISAGREE	2	55	6.2	6.2	8.9
SLIGHTLY DISAGREE	3	69	7.8	7.8	16.7
NEITHER AGREE OR DIS	4	122	13.8	13.8	30.5
SLIGHTLY AGREE	5	98	11.1	11.1	41.6
AGREE	6	354	40.0	40.0	81.6
STRONGLEY AGREE	7	163	18.4	18.4	100.0
	.	1	.1	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 885 MISSING CASES 1

Q33 TIME LOST FR POLICY

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	127	14.3	14.4	14.4
DISAGREE	2	178	20.1	20.2	34.5
SLIGHTLY DISAGREE	3	76	8.6	8.6	43.1
NEITHER AGREE OR DIS	4	149	16.8	16.9	60.0
SLIGHTLY AGREE	5	143	16.1	16.2	76.2
AGREE	6	113	12.8	12.8	89.0
STRONGLEY AGREE	7	97	10.9	11.0	100.0
	.	3	.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 883 MISSING CASES 3

- -

Q34 THINK OF QUITTING

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	238	26.9	27.0	27.0
DISAGREE	2	180	20.3	20.4	47.4
SLIGHTLY DISAGREE	3	34	3.8	3.9	51.3
NEITHER AGREE OR DIS	4	150	16.9	17.0	68.3
SLIGHTLY AGREE	5	93	10.5	10.6	78.9
AGREE	6	87	9.8	9.9	88.8
STRONGLEY AGREE	7	99	11.2	11.2	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 881 MISSING CASES 5

Q35 DIFF TO AGREE W POLICIES

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	85	9.6	9.6	9.6
DISAGREE	2	192	21.7	21.8	31.4
SLIGHTLY DISAGREE	3	54	6.1	6.1	37.6
NEITHER AGREE OR DIS	4	198	22.3	22.5	60.0
SLIGHTLY AGREE	5	150	16.9	17.0	77.1
AGREE	6	112	12.6	12.7	89.8
STRONGLEY AGREE	7	90	10.2	10.2	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 881 MISSING CASES 5

- -

Q36 NEED NOT SMK TO BE HARMED

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	31	3.5	3.5	3.5
DISAGREE	2	17	1.9	1.9	5.4
SLIGHTLY DISAGREE	3	13	1.5	1.5	6.9
NEITHER AGREE OR DIS	4	74	8.4	8.4	15.3
SLIGHTLY AGREE	5	78	8.8	8.8	24.1
AGREE	6	223	25.2	25.2	49.3
STRONGLEY AGREE	7	448	50.6	50.7	100.0
	.	2	.2	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 884 MISSING CASES 2

Q37 POLICY GOOD EX FOR PATIENTS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	35	4.0	4.0	4.0
DISAGREE	2	45	5.1	5.1	9.1
SLIGHTLY DISAGREE	3	20	2.3	2.3	11.4
NEITHER AGREE OR DIS	4	110	12.4	12.5	23.8
SLIGHTLY AGREE	5	65	7.3	7.4	31.2
AGREE	6	221	24.9	25.1	56.3
STRONGLEY AGREE	7	385	43.5	43.7	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	.

VALID CASES 881 MISSING CASES 5

- -

Q38 POORLY ENFORCED

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	179	20.2	20.3	20.3
DISAGREE	2	320	36.1	36.3	56.6
SLIGHTLY DISAGREE	3	73	8.2	8.3	64.9
NEITHER AGREE OR DIS	4	188	21.2	21.3	86.2
SLIGHTLY AGREE	5	76	8.6	8.6	94.8
AGREE	6	29	3.3	3.3	98.1
STRONGLEY AGREE	7	17	1.9	1.9	100.0
	.	4	.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 882 MISSING CASES 4

Q39 DO NOT FEEL PART OF ORG

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	180	20.3	20.5	20.5
DISAGREE	2	272	30.7	30.9	51.4
SLIGHTLY DISAGREE	3	80	9.0	9.1	60.5
NEITHER AGREE OR DIS	4	146	16.5	16.6	77.1
SLIGHTLY AGREE	5	95	10.7	10.8	87.9
AGREE	6	60	6.8	6.8	94.8
STRONGLEY AGREE	7	46	5.2	5.2	100.0
	.	7	.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 879 MISSING CASES 7

- -

Q40 POLICY FAIR TO SMKRS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	112	12.6	12.7	12.7
DISAGREE	2	70	7.9	7.9	20.6
SLIGHTLY DISAGREE	3	89	10.0	10.1	30.7
NEITHER AGREE OR DIS	4	120	13.5	13.6	44.3
SLIGHTLY AGREE	5	68	7.7	7.7	52.0
AGREE	6	233	26.3	26.4	78.5
STRONGLEY AGREE	7	188	21.2	21.3	99.8
	8	1	.1	.1	99.9
	10	1	.1	.1	100.0
	.	4	.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 882 MISSING CASES 4

Q41 SMKRS SHOULD BE ABLE TO SMK IN WORK AREA

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	352	39.7	39.8	39.8
DISAGREE	2	194	21.9	21.9	61.7
SLIGHTLY DISAGREE	3	64	7.2	7.2	68.9
NEITHER AGREE OR DIS	4	69	7.8	7.8	76.7
SLIGHTLY AGREE	5	69	7.8	7.8	84.5
AGREE	6	60	6.8	6.8	91.3
STRONGLEY AGREE	7	76	8.6	8.6	99.9
	8	1	.1	.1	100.0
	.	1	.1	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 885 MISSING CASES 1

- -

Q42 SAT W MY WORK

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	29	3.3	3.3	3.3
DISAGREE	2	33	3.7	3.7	7.0
SLIGHTLY DISAGREE	3	32	3.6	3.6	10.7
NEITHER AGREE OR DIS	4	51	5.8	5.8	16.5
SLIGHTLY AGREE	5	112	12.6	12.7	29.2
AGREE	6	388	43.8	44.0	73.2
STRONGLEY AGREE	7	236	26.6	26.8	100.0
	.	5	.6	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 881 MISSING CASES 5

Q43 SEE ILLNESS & DISEASE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	76	8.6	8.6	8.6
DISAGREE	2	90	10.2	10.2	18.8
SLIGHTLY DISAGREE	3	18	2.0	2.0	20.9
NEITHER AGREE OR DIS	4	62	7.0	7.0	27.9
SLIGHTLY AGREE	5	73	8.2	8.3	36.2
AGREE	6	215	24.3	24.4	60.5
STRONGLEY AGREE	7	348	39.3	39.5	100.0
	.	4	.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 882 MISSING CASES 4

- -

Q44 OVERALL POS EFFECT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
STRONGLEY DISAGREE	1	64	7.2	7.2	7.2
DISAGREE	2	54	6.1	6.1	13.3
SLIGHTLY DISAGREE	3	49	5.5	5.5	18.8
NEITHER AGREE OR DIS	4	150	16.9	16.9	35.8
SLIGHTLY AGREE	5	102	11.5	11.5	47.3
AGREE	6	264	29.8	29.8	77.1
STRONGLEY AGREE	7	203	22.9	22.9	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

Q45 RESPONDED AS FELT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NEITHER AGREE OR DIS	4	5	.6	.6	.6
SLIGHTLY AGREE	5	7	.8	.8	1.4
AGREE	6	228	25.7	25.7	27.1
STRONGLEY AGREE	7	646	72.9	72.9	100.0
	TOTAL	886	100.0	100.0	

VALID CASES 886 MISSING CASES 0

- -

SQ46 HOW LONG SMOKED

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
< ONE YEAR	1	3	.3	1.4	1.4
1-2 YEARS	2	7	.8	3.3	4.7
APX 3 YEARS	3	8	.9	3.7	8.4
APX 4 YEARS	4	14	1.6	6.5	14.9
APX 5 YEARS	5	19	2.1	8.8	23.7
6-10 YEARS	6	46	5.2	21.4	45.1
11-15 YEARS	7	40	4.5	18.6	63.7
16-20 YEARS	8	27	3.0	12.6	76.3
OVER 20 YEARS	9	51	5.8	23.7	100.0
	.	671	75.7	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 215 MISSING CASES 671

SQ47 # SMOKED @ WORK

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-10	1	172	19.4	82.7	82.7
11-20	2	29	3.3	13.9	96.6
21-30	3	3	.3	1.4	98.1
31-40	4	4	.5	1.9	100.0
	.	678	76.5	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 208 MISSING CASES 678

- -

SQ48 # SMOKED IN A DAY

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-10	1	44	5.0	22.4	22.4
11-20	2	101	11.4	51.5	74.0
21-30	3	38	4.3	19.4	93.4
31-40	4	11	1.2	5.6	99.0
>=41	5	2	.2	1.0	100.0
	.	690	77.9	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 196 MISSING CASES 690

SQ49 # BREAKS/DAY

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
1	1	10	1.1	5.1	5.1
2	2	43	4.9	22.1	27.2
3	3	35	4.0	17.9	45.1
4	4	44	5.0	22.6	67.7
5	5	12	1.4	6.2	73.8
6	6	8	.9	4.1	77.9
7	7	8	.9	4.1	82.1
8	8	8	.9	4.1	86.2
9 OR MORE	9	2	.2	1.0	87.2
NONE	10	25	2.8	12.8	100.0
	.	691	78.0	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 195 MISSING CASES 691

- -

SQ50 ENROUTE TIME TO BREAK

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
< 5 MIN	1	142	16.0	72.1	72.1
5-10 MIN	2	40	4.5	20.3	92.4
> 10 MIN	3	3	.3	1.5	93.9
?	4	12	1.4	6.1	100.0
	.	689	77.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 197 MISSING CASES 689

SQ51 LENGTH OF BREAKS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
< 5 MIN	1	63	7.1	32.8	32.8
5-10 MIN	2	86	9.7	44.8	77.6
11-15 MIN	3	25	2.8	13.0	90.6
> 15 MIN	4	6	.7	3.1	93.8
?	5	12	1.4	6.3	100.0
	.	694	78.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 192 MISSING CASES 694

- -

SQ52 NEW ACQUAINTENCES?

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO	1	95	10.7	49.5	49.5
SOCIAL	2	16	1.8	8.3	57.8
USEFULL WORK	3	17	1.9	8.9	66.7
BOTH	4	64	7.2	33.3	100.0
	.	694	78.3	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 192 MISSING CASES 694

- -

SQ53 PRODUCTIVITY CHANGE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO CHG	1	126	14.2	64.3	64.3
LESS	2	62	7.0	31.6	95.9
MORE	3	8	.9	4.1	100.0
	.	690	77.9	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 196 MISSING CASES 690

SQ54 EFFECT ON # CIGS @ WORK

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO CHG	1	64	7.2	32.5	32.5
MORE	2	12	1.4	6.1	38.6
LESS	3	106	12.0	53.8	92.4
QUIT @ WK	4	15	1.7	7.6	100.0
	.	689	77.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 197 MISSING CASES 689

- -

SQ55 BEF POL # CIGS @ WORK

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-10	1	137	15.5	69.9	69.9
11-20	2	48	5.4	24.5	94.4
21-30	3	10	1.1	5.1	99.5
31-40	4	1	.1	.5	100.0
	.	690	77.9	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 196 MISSING CASES 690

SQ56 BEF POL # CIGS / DAY

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-10	1	35	4.0	17.9	17.9
11-20	2	90	10.2	46.2	64.1
21-30	3	45	5.1	23.1	87.2
31-40	4	21	2.4	10.8	97.9
>=41	5	4	.5	2.1	100.0
	.	691	78.0	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 195 MISSING CASES 691

113 Aug 89 Frequencies Of Survey#1 Clean Data Using SPSSX
14:04:21 AFIT VAX/785 UNIX BSD 4.3

SQ57 TRIED TO QUIT?

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO, NEVER	1	30	3.4	15.2	15.2
ONCE OR TWICE	2	79	8.9	40.1	55.3
SEVERAL TIMES	3	68	7.7	34.5	89.8
MANY TIMES	4	20	2.3	10.2	100.0
	.	689	77.8	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 197 MISSING CASES 689

- -

ESQ58 TIME SINCE QUIT?

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
< 6 MOS	1	22	2.5	10.4	10.4
6 MOS-1 YR	2	12	1.4	5.7	16.0
1-2 YRS	3	13	1.5	6.1	22.2
2-4 YRS	4	30	3.4	14.2	36.3
4-6 YRS	5	19	2.1	9.0	45.3
6-10 YRS	6	36	4.1	17.0	62.3
>=10 YRS	7	80	9.0	37.7	100.0
	.	674	76.1	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 212 MISSING CASES 674

ESQ59 WHY QUIT?

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
HEALTH	1	90	10.2	43.9	43.9
FAMILY/FR	2	34	3.8	16.6	60.5
POLICY	3	2	.2	1.0	61.5
OTHER	4	79	8.9	38.5	100.0
	.	681	76.9	MISSING	
	TOTAL	886	100.0	100.0	

VALID CASES 205 MISSING CASES 681

Appendix E: Demographic Breakdown

Demographic Factor	Percent Of Population	Percent Of Respondents
By employee position[1]		
Physicians	14	13
Nurses	15	16
Physician Assistants/ Nurse Practitioners	2	2
Technicians	39	36
Other Staff	5	10
Administrative	6	8
Secretarial	11	11
Support Staff	9	4
By grade[2]		
Officer	27	34
Enlisted	41	37
GS/GM	22	22
WG/WS	3	2
Red Cross Volunteer	8	5
By job status[3]		
Full Time	89	92
Part Time	2	1
Temporary	2	1
Red Cross Volunteer	8	5

[1]Note: N = 863. For population percentage calculations, the following AFSC assignments were made:

Physicians:	093XX - 096XX, 098XX
Nurses:	097XX, 09756 - 09786
PA/Nurse P:	09281, 09286, 09296, 90230 - 90250
Technicians:	90130 - 90590, 90730 - 91130, 91255 - 91499, 91950 - 98270, 90251 - 90450, 92430 - 98270
Other Staff:	091XX, 09211 - 09276, 09296, 08811 09176 - 09256, 99006
Admin:	090XX, 90600 - 90699, 91150 - 91190, 09356
Secretarial:	70250, 903630 - 90760
Support:	01495, 10090 - 75132, 91500 - 91878, 01925, 049255, 09025, 23172 - 67251, 91530 - 91970

[2]Note: N = 892.
[3]Note: N = 882.

Demographic Factor	Percent Of Population	Percent Of Respondents
By Age Of Military Employees[4]		
20 Or Less	5	4
21 - 30	50	45
31 - 40	35	37
41 - 50	9	12
51 - 60	1	2
61 Or Greater	0	0
By Sex[5]		
Male	56	54
Female	44	46

[4]Note: N = 631 (age data was available for military personnel only).
[5]Note: N = 882.

References

Adams, Roy. "Smoking Lamp Is Out in Training Command." Air Force Times: 12, 24 (November 14, 1988).

Allen, Kimberly M. A Study To Compare The Health Practices of Military and Civilian Personnel. MS thesis, AFIT/GSM/LS/87S-2. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1987 (AD-A187 927).

Andrews, Joseph L. "Reduced Smoking In The Hospital," Chest, 84: 206-209 (August 1983).

Baker, James N., Alden Cohen, Sheryl Fragin, and Karen Springen. "A Big Apple Antismoking Law," Newsweek, 111: 25 (April 18, 1988).

Becker, Diane M., Ann Myers, Martha Sacci, Sarah Weida, Robert Swank, David Levine, and Thomas Pearson. "Smoking Behavior & Attitudes Toward Smoking Among Hospital Nurses," American Journal Of Public Health, 76: 1449-1451 (December 1986).

Biener, Lois, David Abrams, Karen Emmons, and Michael Follick. "Evaluating Worksite Smoking Policies, Methodologic Issues," New York State Journal Of Medicine, 89(1): 5-10 (January 1989).

Biener, Lois, David Abrams, Michael Follick, and Larry Dean. "A Comparative Evaluation of a Restrictive Smoking Policy in a General Hospital," American Journal Of Public Health, 79: 192-195 (February 1989).

Bureau Of National Affairs (BNA). Where There's Smoke: Problems & Policies Concerning Smoking In The Workplace. Special Report. Washington DC: Bureau Of National Affairs, Inc., 1986.

Burr, R. G. Smoking Behavior Among U.S. Navy Enlisted Men: Some Contributing Factors. Naval Health Research Center, San Diego CA, March 1983 (AD-A131 203).

Conway, T. L. and T. A. Cronan. Smoking and Physical Fitness Among Navy Shipboard Personnel. Naval Health Research Center, San Diego CA, December 1986 (AD-A180 160).

Crocker, Elizabeth M. "Controlling Smoking in the Workplace," Labor Law Journal, 38: 739-746 (December 1987).

Cronan, T. A., Terry L. Conway, and Suzanne L. Kaszas. The Navy Is Creating Smokers: When, Where, and Why. Paper presented at the American Psychological Association Convention, Atlanta GA, 1988.

Cronan, T. A., L. K. Hervig, and T. L. Conway. Evaluation of Smoking Interventions in Recruit Training. Naval Health Research Center, San Diego CA, December 1987 (AD-A191 940).

Datko, Charles. Executive Summary, and Bullet Background Paper (including viewgraphs) to 1988 Survey, "Use of Tobacco Products by USAF Personnel." Randolph AFB, HQ AFMPC/DPMYOS (October 26, 1988).

Department Of Health And Human Services (DHHS), Public Health Service Centers For Disease Control. The Health Consequences Of Involuntary Smoking, A Report of the Surgeon General. Washington DC: Government Printing Office, 1986.

"DoD Drinking, Drug Use Lowest Yet," Skywriter: 1 (February 17, 1989).

Downey, R. M. Smoking in Air Force Facilities. AFR 30-27. Washington DC: HQ USAF, 19 July 1988.

Dyer, Frederick N. Smoking And Soldier Performance: A Literature Review. Research Solutions, Inc., Columbus GA, June 1986 (AD-A194 366).

Emory, William C. Business Research Methods (Third Edition). Homewood IL: Richard D. Irwin, Inc., 1985.

Fisher, P. C. A Descriptive Study of Smoking Behavior Among Air Force Trainees. MS thesis, AFIT/CI/NR85-66T. School of Public Health, University of Texas, Houston TX, June 1985 (AD-A158 507).

Gibbs, Nancy R. "All Fired Up Over Smoking," Time, 131: 64-71 (April 18, 1988).

Goode, Erica E. "A New Addictive Drug: Nicotine," U. S. News And World Report, 104: 62-63 (May 30, 1988).

Hamilton, J. C. "No Smoking Sweeps America," Business Week: 40-52 (July 27, 1987).

Hyde, Bret A. A Study of the Physical Health Practices of United States Air Force Captains. MS thesis, AFIT/GLM/XPX/86S-34. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1986 (AD-A174 446).

Koepp, Stephen. "Tobacco's First Loss," Time, 131: 48-50 (June 27, 1988).

Konrad, Walecia and Dean Foust. "RJR Swears Off Saatchi -- And Nabisco Is In A Sweat," Business Week: 36 (April 18, 1988).

Lacayo, Richard. "Smoke Gets In Your Rights," Time, 131: 72-75 (April 18, 1988).

Lahey Clinic Employee Smoking Questionnaire. Undated document provided to the author in November, 1988 by Joseph L. Andrews Jr. M. D., Lahey Clinic Medical Center, Burlington MA. 1-3.

Marsden, M. E., R. M. Bray, and J. R. Herbold. "Substance Use & Health Among U.S. Military Personnel: Findings From The 1985 Worldwide Survey," Preventative Medicine 17(3): 366-376 (May 1988).

New England Deaconess Hospital Smoking Survey. Undated document provided to the author in November, 1988 by Joseph L. Andrews Jr. M. D., Lahey Clinic Medical Center, Burlington MA. 1-2.

"No Smoking At 20,000 Feet," U. S. News And World Report, 104: 11 (May 2, 1988).

Petersen, Lyle R., Steven D. Helgerson, Carol M. Gibbons, Chanelle R. Calhoun, Katherine H. Ciacco, and Karen C. Pitchford. "Employee Smoking Behavior Changes and Attitudes Following a Restrictive Policy on Worksite Smoking in a Large Company," Public Health Reports, 103: 115-119 (March-April 1988).

Questionnaire: Effects Of Smoking Policy at Connecticut Mutual Life and Fact Sheet: Responses To Smoking Questionnaires. Undated document provided to the author in November, 1988 by Lyle R. Petersen, M. D., Center for Disease Control, Atlanta GA. 1-8.

Reasor, Mark J. "Scientific Issues Regarding Exposure to Environmental Tobacco Smoke and Human Health," Clearing the Air, Perspectives on Environmental Tobacco Smoke," edited by Robert D. Tollison. Lexington MA: Lexington Books, 1988.

Rigotti, N. A., B. Pikl, P. Cleary, D. E. Singer, and A. G. Mulley. "The Impact Of Banning Smoking On A Hospital Ward: Acceptance, Compliance, Air Quality And Smoking Behavior (Abstract)" Clinical Research 34(2): 833A (April 1986).

Robertson, Gray. "Building-Related Illnesses: Tobacco Smoke in Context,: Clearing the Air, Perspectives on Environmental Tobacco Smoke," edited by Robert D. Tollison. Lexington MA: Lexington Books, 1988.

Rosenstock, Irwin M. "Evaluation Of Smoking Prohibition Policy in a Health Maintenance Organization," American Journal Of Public Health, 76: 1014-1015 (August 1986).

Schill, Charlie. "Health Groups Back Plan To Raise Tobacco, Alcohol Prices." Air Force Times: 12 (November 14, 1988).

Special Projects Office of the Health Program (SPOHP). Passive Smoking in the Workplace: Selected Issues (Staff Paper). Office of Technology Assessment U. S. Congress: May 1986.

SPSS^{X} User's Guide (Second Edition). New York: McGraw-Hill Book Company, 1986.

Swart, Carroll J. "Corporate Smoking Policies: Today and Tomorrow," Personnel, 65: 61-66 (August 1988).

Tollison, Robert D. Clearing The Air: Perspectives On Environmental Tobacco Smoke. Lexington MA: Lexington Books, 1988.

Vogel, Russel A. An Investigation of the Health Practices, Attitudes, and Perceptions of USAF Military and Civilian Personnel. MS thesis, AFIT/GSM/LSA/86S-20. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1986 (AD-A174 578).

Williams, Webster E. "Where There's Smoke, There's Ire," Venture, 10: 12 (January 1988).

Vita

Major Mark E. Kain [redacted] was nominated to attend the United States Air Force Academy that same year. After graduation from the Academy with a Bachelor of Science Degree in electrical engineering, he attended pilot training at Reese AFB in 1979. He flew C-141 Starlifters from 1980 to 1988 at Norton AFB and Altus AFB. He is a senior pilot with over 3000 hours flying time and has served as both an instructor and examiner pilot. He is a graduate of Squadron Officer School and Air Command and Staff College. He entered the Air Force Institute of Technology School of Systems and Logistics in June 1989.

[redacted]

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AFIT/GSM/LSR/89S-21	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION School of Systems and Logistics 6b. OFFICE SYMBOL (If applicable) AFIT/LSY	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Air Force Institute of Technology Wright-Patterson AFB OH 45433-6583	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
THE IMPACT OF A NONSMOKING POLICY ON A USAF MEDICAL CENTER

12. PERSONAL AUTHOR(S)
Mark E. Kain, B.S., Maj, USAF

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
MS Thesis	FROM _____ TO _____	1989 September	145

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Tobacco Smoking; Hospitals; Smoking (Tobacco) Policies; Preventive Medicine
05	01		

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Thesis Advisor: John A. Ballard, Lt Col
Assistant Professor of Management and Organizational Science
Department of Communication and Organizational Sciences

Approved for public release: IAW AFR 190-1.

Larry W. Emmelhainz

LARRY W. EMMELHAINZ, Lt Col, USAF 14 Oct 89
Director of Research and Consultation
Air Force Institute of Technology (AU)
Wright-Patterson AFB OH 45433-6583

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL John A. Ballard, Lt Col	22b. TELEPHONE (Include Area Code) (513) 255-4529 / 22c. OFFICE SYMBOL LSR

This study investigated the results of the implementation of a strict nonsmoking policy at a USAF medical center. Areas of interest included changes in smoking behavior, attitudes toward the policy, and organizational behavior after policy implementation. A literature search revealed only five similar previous studies, none of which were conducted in a military organization.

A survey was administered six months after policy implementation to the entire staff of 1613 employees. 934 were returned for a response rate of 57.9%.

Smoking prevalence did not change significantly. The number of cigarettes reported smoked at work decreased by an average of 1.9 per workday. There were no indications of compensatory smoking off the job. Smokers differed significantly with nonsmokers in their amount of support for the policy. Using a constructed scale of response items, only 31% of the smokers approved of the policy while 89% of the nonsmokers approved.

Organizational behavior areas examined included commitment, job satisfaction, smoker networking, break patterns, and perceptions of productivity decrease. The average daily time loss per smoker per day due to smoking breaks was calculated to be 49.5 minutes. Over 70% of the respondents reported a perceived decrease in productivity as a result of the policy. Theses. (SDC)